

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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HESAI TECHNOLOGY Co., LTD.,  
Petitioner,

v.

OUSTER, INC.,  
Patent Owner.

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IPR2023-01456 (Patent 11,178,381 B2)  
IPR2023-01457 (Patent 11,190,750 B2)

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Record of Oral Hearing  
Held: January 13, 2025

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Before MEREDITH C. PETRAVICK, KEVIN W. CHERRY, and  
JON M. JURGOVAN, *Administrative Patent Judges*.

IPR2023-01456 (Patent 11,178,381 B2)

IPR2023-01457 (Patent 11,190,750 B2)

APPEARANCES:

ON BEHALF OF THE PETITIONER:

MICHAEL HAWKINS, ESQUIRE  
Quinn Emanuel Urquhart & Sullivan, LLP  
1300 I street NW  
Suite 900  
Washington DC 20005  
(202) 538-8000

ON BEHALF OF THE PATENT OWNER:

PHILLIP MORTON, ESQUIRE  
PATRICK LAUPPE, ESQUIRE  
Cooley LLP  
1299 Pennsylvania Avenue Northwest  
Suite 700  
Washington, D.C. 20221  
(202) 842-7800

The above-entitled matter came on for hearing on Monday January 13, 2025, commencing at 10:00 a.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

1 PROCEEDINGS

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3 JUDGE CHERRY: Good morning. I am Judge Cherry, and with me  
4 are Judges Jurgovan and Petravick, and we are here for the hearings in two  
5 cases, IPR2023-1456 and IPR2023-1457, involving U.S. Patent Numbers  
6 11,178,381 and 11,190,750, respectively.

7 Will the parties please make their appearances?

8 MR. HAWKINS: Hello. This is Michael Hawkins, lead counsel for  
9 Petitioner Hesai Technology.

10 JUDGE CHERRY: Welcome, Mr. Hawkins.

11 MR. MORTON: This is Phillip Morton, lead counsel for Patent  
12 Owner Ouster, and with me is Patrick Lauppe, also for Ouster.

13 JUDGE CHERRY: Okay. Welcome. Welcome, Mr. Morton. The  
14 way we're going to proceed this morning is that Petitioner will go first as  
15 they have the burden of proof. They will present their case in chief and then  
16 they can reserve some time for rebuttal. And then we'll proceed to the  
17 Patent Owner's case and they will present their arguments. And you can also  
18 reserve some time for surrebuttal. And then we'll get the rebuttal times from  
19 both the parties.

20 So, Petitioner, how much time do you want to reserve for your  
21 rebuttal?

22 MR. HAWKINS: Good morning, Your Honor. We'll reserve 20  
23 minutes for rebuttal. Thank you.

24 JUDGE CHERRY: Sure. And I should mention, we have 90 minutes  
25 per side, so that means you'll go for 70 minutes in your case in chief, and

1 then you'll have 20 minutes in rebuttal. And Patent Owner also has 90  
2 minutes. How much time would you like to reserve for rebuttal?

3 MR. LAUPPE: Thirty minutes, Your Honor.

4 JUDGE CHERRY: Awesome. All right. Petitioner, as I said, you  
5 have the burden of proof, so you get to go first, and you can begin whenever  
6 you're ready.

7 MR. HAWKINS: Great. Thank you, Your Honors. May it please the  
8 Board, I'm Michael Hawkins. I'm here to present the Petitioner's side for  
9 IPR 2023-01456 and 01457. These two IPRs relate to two related patents,  
10 and because of that, if you'll turn to slide 2 of Petitioner's demonstratives,  
11 you'll see there's a set of issues, many of them overlapping between these  
12 two IPR cases. So our goal will be to address these on an issue basis rather  
13 than by a particular patent number basis. And I will try to identify the  
14 differences as they come up. In particular, I hope to address issues 1, 2, and  
15 3 today at least, But, of course, leave time for questions as we proceed  
16 along.

17 And I'd like to start first with the "coincident with" issue, issue 1.  
18 And the way I'd like to address that, first we'll take a look at the actual claim  
19 language. That's shown here on slide 4 of Petitioner's demonstratives. And  
20 you'll see that each of the independent claims in the two patents at issue  
21 recite that each pixel has a field of view that's coincident with the emission  
22 region of its corresponding emitter. And the "coincident with" phrase is  
23 subject to a claim construction presented by Patent Owner after Institution.  
24 I'd like to briefly give a little bit of background before we get to that claim  
25 construction issue just to kind of set the stage there.

1           If you turn with me to slide 5, you'll see some parts of the patent  
2 specification at that issue. In particular, on the right side is figure 2. There  
3 is an emitter 111. It outputs a laser beam which is then reflected out into the  
4 field. Some portion of that beam on reflection is captured by its  
5 corresponding pixel. And you'll see there are three parts of the specification  
6 that are cited here. There's actually -- the parties have cited to lots of parts  
7 of the specification. These three, the reason I present these really is, if you  
8 notice, we're citing to the Patent Owner's response is actually relying upon  
9 basically the majority for all of column 5, the top of column 6, and then the  
10 Patent Owner's response also cited to column 11. That's going to be  
11 important in a minute and I'll explain why.

12           So let's first just set the stage before we get to the claim construction  
13 issue by saying with *Retterath*, which is a primary ground, it's ground 1 in  
14 each of the petitions, what was its teaching? And that's -- we'll perhaps  
15 explain why the claim construction issue became apparent.

16           So *Retterath* teaches on the left side of slide 7. You'll see there's  
17 figure 4 and it has these emitters 100 and they emit a beam that has a  
18 circular cross-section. *Retterath* teaches that that beam of light 110 is  
19 expressed as an emitter vector 120. In other words, the vector is an  
20 expression of that circular cross-section beam. *Retterath* also teaches in  
21 figure 8 that there are detectors and they likewise receive into them a beam  
22 210.

23           And *Retterath* also features in the lower part of slide 7 you'll see that  
24 it's important to *Retterath* that each detector has this optimal receive vector  
25 220. And the purpose of that is that you want to have the maximum obstacle  
26 energy being transferred. So importantly, that beam 110 and 210 that, if you

1 look on the top right side of slide 7, we cited to this in our petition, where  
2 *Retterath* is teaching that for each emitter detector set, the vectors, which  
3 again are expressed -- the beam is expressed as a vector, are coincident,  
4 period, full stop. To us, that's an express disclosure of being coincident  
5 with.

6 In addition to that, *Retterath* says they also form an on coincident  
7 axis. In other words, where there is this coincidence in the plane, they're  
8 actually axially aligned, too. And that makes a lot of sense because if you  
9 look on slide 8, you'll see that *Retterath* is teaching that this emitter, in its  
10 preferred version, it's emitted as a collimated beam and it creates this nice  
11 perfect round spot 94. And *Retterath* goes a step further. It doesn't say the  
12 beam is dispersed there or the field of view is some giant thing. Rather, if  
13 you look on the lower left side of slide 8, you'll see that *Retterath* teaches in  
14 column 19 that that light energy is emitted and received as that collimated  
15 beam. And so that's important is that that beam is going out, it's making that  
16 round dot, and that beam is then being reflected. And that is the beam 210  
17 that you are seeing in figure 8. And so it makes sense that, in fact, these  
18 things appear to be, if not exactly the same size, that the circular cross-  
19 sections appear to overlap remarkably well.

20 That's the background that we were at prior to the Patent Owner's  
21 response. And if you'll fast forward a little bit to slide 11, you will see that  
22 the Patent Owner presented a claim construction. And the claim  
23 construction essentially said that where you see this phrase "coincident  
24 with," the best option is simply just to delete it and replace it with a new  
25 language. That is, let's say that this emission region of your emitter and that  
26 the field of view area of your pixel, that they are substantially the same area.

1 We want to put that language into the independent claims. And again,  
2 previously, on slide 5, I showed you they were citing to the majority of  
3 column 5, the top of column 6, column 11. And so we noticed that, you  
4 know, some of the parts of the text seemed inconsistent with what they're  
5 saying, that it has to be substantially the same area and it has to match. And  
6 there's almost like this perfect one-to-one area matching.

7 Slide 12 shows that the Patent Owner was relying upon figure 1.  
8 They said, well, figure 1 shows you, look, they match. And Dr. Shanley  
9 looked at this, who was Petitioner's expert, and he said, well, figure 1 doesn't  
10 tell you what the size are. You can't see it. You'd have to zoom in and  
11 magnify that.

12 And Dr. Janet disagreed. So that his opinion is based on, for what  
13 we can tell, exclusively on figure 1. And this is citing to -- the lower right  
14 side of slide 12, you'll see it's citing to Exhibit 1041, page 29. Keep that  
15 exhibit number in mind. It's going to be important a little bit later.

16 And so we noted this. In slide 13 you'll see that in our Petitioner's  
17 reply we said, wow, you were citing to column 5 and figure 11, they seem to  
18 be describing figure 2. And so we looked at figure 2 and, lo and behold, the  
19 emitter does have an emission region and it's noticeably larger than what  
20 field of view is picked up by its corresponding detector. And we didn't say,  
21 by the way, figure 2 is some outlandish, you know, different thing. It seems  
22 to be that the text of the specification also seems to say, yeah, that's what we  
23 mean by coincidence is that they can roughly be -- one can be larger than the  
24 other. And that's okay because the overlap is sufficient where it is kind of  
25 this exclusive detection, it's not being going to any other detectors.

1           And so we noted that. We said, it appears as if your claim  
2 construction is excluding your preferred embodiment. And the Patent  
3 Owner's response was remarkable here. They didn't say, no, you're wrong,  
4 here's how figure 2 fits into our construction. And no, you're wrong, here's  
5 how the top of column 6, which is shown on the top left side of slide 13  
6 here, here's how this fits into our construction. Here's how we're consistent.  
7 The Patent Owner, if you look on slide 14, ran away from it.

8           So on the left side of slide 14, this is the Patent Owner's response.  
9 This is them citing, for example, for specification support for their  
10 construction to the bottom of column 3. And if you look, that paragraph  
11 says, "As shown in figures 1 and 2," so it makes sense why we pointed to  
12 that. Or if you look at the bottom left side of slide 14, this is the Patent  
13 Owner's response. This is for the '381 patent. And it's saying, yeah, go look  
14 at that first full paragraph in column 6, the one that tells us about being  
15 substantially coincident and how there's only -- you know, there's this "and"  
16 parenthetical to it.

17           And the Patent Owner, again, didn't say like here's how it's  
18 consistent. What they said was, ah, figure 2, that has this aberration, this  
19 curve in it, which, by the way, isn't mentioned anywhere in the specification.  
20 And then if you look at the lower right side of slide 14, the first full sentence  
21 there, none of the specification excerpts that Petitioner points to relate to the  
22 preferred embodiment, which, by the way, are the same excerpts that they  
23 want to do. And worse yet, or actually more in the extreme, the part of  
24 column 2 that they cited to they said, just kidding, unclaimed.

25           And I'll just say, to our expert, Dr. Shanley, when he read the claims,  
26 he went back and looked and he said this is not apparent to me this is

1 unclaimed. It appears as if it's fully consistent with our view of what's going  
2 on.

3 It actually gets worse in the '750 patent, the 01457 case, if you look  
4 at the Patent Owner's response. This is on the left side, page 28 of the Patent  
5 Owner's response. There's a string (phonetic) site and it says, hey, for our  
6 support, go look at the -- basically the entirety of column 5. And I  
7 encourage you guys to go look at -- all of the Judges here to please look at  
8 column 5. It says repeatedly "as shown in figure 2." "As shown in figure  
9 2."

10 And it says, yeah, you know, you should also look at it as that first  
11 full paragraph on column 6, the sentence that we said is completely  
12 inconsistent with your construction. And again on column 11, shown in  
13 figure 2. And here the Patent Owner simply again said the same point: it's  
14 an aberration. Figure 2 is unclaimed. Or I should say this, they're very clear  
15 that column 6 is unclaimed. I would be interested to know if Patent Owner  
16 today will tell you that figure 2 is unclaimed. It's very closely worded in  
17 their surreply as to whether or not figure 2 is unclaimed or not. They won't  
18 say it out loud in the actual document.

19 So if you -- now let's go to slide 18. That's where we were at in the  
20 timing of this. And so we went back and we said, well, first of all, let's look  
21 at *Retterath*'s teaching again in this context. And if, again, if you look at the  
22 middle of column of slide 18, we said, you know, *Retterath* is literally using  
23 the text of your claim. It says that these vectors, which are mere expressions  
24 of that circular cross-section beam of light 110 and that circular cross-  
25 section beam 210, they're coincident. So that appears to be express  
26 disclosure, but maxi-aligned (phonetic). And when we go and dive in even

1 further, you know, the way that you get in the lower right side of slide 18,  
2 the way you get this maximum optical energy transfer, it makes sense that,  
3 in fact, there's almost this perfect matching of the field of view and the  
4 circular cross-section of that beam spot 94. And that's why it is in the  
5 middle of slide 18. It's emitted and received as this collimated beam. So to  
6 us that was a straightforward disclosure of what we believe is a classic view  
7 of or the ordinary view of coincident with. And more importantly, it appears  
8 to just squarely disclose even their narrower view of substantially the same  
9 area.

10 And that's not all. We had in our petition a further alternative 103  
11 ground which was based further on the *Weimer* reference. And there our --  
12 this is our petition on slide 19. Our petition says that *Weimer* provides this  
13 express textual suggestion in column 4, line 58. If you look on the left side  
14 of slide 19, you'll see we're citing to column 4, lines 56 to 58, of *Weimer*.  
15 And it tells you, you know, this field of view, it should match the emission  
16 of that laser beam, the emission region. And then in our petition we said in  
17 our motivation to combine, by the way, these are going to match. And this  
18 was in our petition. This is not some new thing that we're bringing up. This  
19 was there.

20 And Patent Owner's response wasn't to say let me talk about column  
21 4. Let's go into contextual suggestion because, again, on slide 19 if you --  
22 we're not saying let's bodily incorporate *Weimer*. In fact, our petition was  
23 fairly expressed several times, we are not relying on bodily incorporation.  
24 But instead, if I took that suggestion of isn't it great if they match and I then  
25 have these circular cross-sections of the beam 110 and the circular cross-

1 section of the beam 210, it seems as if that suggestion, when I take that and  
2 apply it to *Retterath's* teaching that that's the end result I would have.

3 Patent Owner didn't really address column 4, line 56. The Patent  
4 Owner instead went down what we call a straw man bodily incorporation.  
5 So they rely upon *Weimer's* figure 2A or 3A. And they take that, they  
6 picked an example and they say we're going to take that, we're going to  
7 bodily incorporate that into *Retterath*. And when we do that, ah-ha, it's not  
8 substantially the same area.

9 And so our first response is on slide 21. Well, our first response  
10 was, first of all, you're missing what we said about column 4 and the  
11 suggestion there. So you're not really addressing our case in chief, but let's  
12 go down this road. Even if we went down this straw man of the bodily  
13 incorporation of figures 2A or 3A and the squares and the circles, you know,  
14 you're missing several critical points here. The first is that even in that type  
15 of an example, *Weimer* is stressing that the goal of these systems is that your  
16 laser spot size be only slightly smaller than the receiver's instantaneous  
17 view. This is Dr. Shanley on slide 21. He's citing to column 1, line 56 of  
18 *Weimer*.

19 And so the point was, even in that context, even if we went down  
20 your narrow road and responded to that only, we didn't stick with our case in  
21 chief, which we want to, even then being only slightly smaller than appears  
22 to be very, very similar to being substantially the same area. So here we are.  
23 All we know at this point in time, we're at the oral hearing, all we know is  
24 that if you're only slightly smaller than in a difference, well, then you're not  
25 substantially the same area. And we don't know why. We don't know where  
26 that line is.

1           And so I'm going to move on to the *Imai* grounds here in a moment.  
2   Before I do so, if there's any questions about the *Retterath* or *Weimer*  
3   grounds, because the *Imai* grounds shows the opposite of slightly smaller  
4   than where it says slightly larger than. And I want to address that, too.

5           Okay. So I'll move on to the coincident with element for the *Imai*  
6   grounds. Now, I will note before starting, the *Imai* grounds are actually  
7   important in terms of just numerically there is a smaller number of disputed  
8   issues. Realistically, issues 1, 2, and 3 that were up on my slide 2, that's all  
9   that's really disputed to *Imai*. If *Imai* has coincident with, if *Imai* has  
10   adjacent to, and if *Imai* has proportional to, you know, there's not much else  
11   that's really at play here. But I want to dive into *Imai* because it has a  
12   different teaching, but it still gets at the coincident with in substantially the  
13   same way.

14           So on slide 24, this breaks down our *Imai* grounds in terms of our  
15   petition brought up --we basically noted, hey, that *Imai* teaches this in two  
16   ways. We call it a first predictable manner and a second predictable manner.  
17   If you look at pages 66 and 67 of our petition that's cited on the middle of  
18   slide 24 here, you'll see that we're relying upon *Imai*'s figure 10. And *Imai*  
19   has a vertically stacked 1-by-4 array of the laser emitters and a vertically  
20   stacked 1-by-4 array of the pixels. And that each one of those pixels has  
21   four single photon avalanche diodes, or a SPAD. So that's kind of what we'll  
22   call the first predictable manner or the first example.

23           Then there was a second example, a second predictable manner.  
24   This is at pages 68 and 69 of the petition. And there we lean on *Imai*'s figure  
25   11 and there is a vertically stacked 1-by-16 array of the laser emitters and  
26   there's a vertically stacked 1-by-16 array of the photo detectors. And then

1 there is a modification of each one of those 1-by-16 detectors has four  
2 SPADs in it, as suggested by *Higashi*. That modification isn't really in  
3 dispute among the parties. Instead, it relates to this alignment of the 1-by-16  
4 array or the 1-by-4 array.

5 Now, what does *Imai* teach us? Well, if you look in the center of  
6 slide 24, you'll see that *Imai* says expressly that this -- for this -- that the first  
7 LD 1, or the laser emitter 1, in that 1-by-4 array, that it has an irradiation  
8 range or an emission region, right? And it corresponds to that light  
9 receivable range of your corresponding pixel. So that correspondence is a  
10 one-to-one correspondence of this area.

11 And on the middle of slide 24, the lower part of the text, you'll see  
12 there we cite to *Imai*, paragraph 125. And there *Imai* is making clear we're  
13 not talking merely about numbers here because it says the numbers of the  
14 laser diodes and the photodiodes, yeah, they're the same and there's this one-  
15 to-one correspondence. Again, this emission region and this field of view,  
16 there's a one-to-one perfect correspondence that's happening.

17 Now, that second predictable manner, pages 68 and 69 of the petition,  
18 this is a very important part because it wasn't really addressed by Petitioner -  
19 - I'm sorry, by Patent Owner.

20 On the next slide, slide 25, page 59 of the petition, on the left side  
21 here. Now, I cited this entire paragraph and to me this is critical. The Patent  
22 Owner, I believe it's slide 63 of Patent Owner's demonstratives, they only  
23 cite for the top part of this paragraph. They would like you to read that  
24 fragment and then put on blinders for the rest of this paragraph. This is in  
25 our petition, not in our Petitioner's reply. And we say, "beyond *Imai*'s  
26 explicit description," in other words, beyond what we just talked about this

1 correspondence and what a person of skill in the art would know that means,  
2 beyond that, a person of scale in the art would be motivated to have that 1-  
3 by-16 array and the corresponding 1-by-16 array, to have them be coincident  
4 with one another. And there's a benefit to doing so. And if you look at the  
5 bottom of that paragraph on slide 25 and, therefore, that emission region is  
6 going to be matched with that corresponding field of view. Matched with,  
7 that is what Patent Owner is trying to say is this narrow construction.

8 And Dr. Shanley in the middle of slide 25 provides substantial  
9 evidence of this and is explaining, yes, it's going to be matched with. Now,  
10 the Patent Owner doesn't -- if you read the Patent Owner's responses, they  
11 never address this proposal. They address *Imai*.

12 Let's turn to slide 26, you'll see what they say. Their whole response  
13 to this coincident with in *Imai* relates to *Imai*'s paragraph 101, where in a  
14 different example, *Imai* says, you know, there's an example where there's a  
15 radiation range of each laser emitter can be said to be slightly larger than  
16 that corresponding light receivable range of the corresponding photodiode or  
17 photo detector. And so what Patent Owner does is takes the word "slightly"  
18 and then replaces it with its antonym, which is "significantly," and puts that  
19 into its Patent Owner's response. And that's the left side of slide 26. Patent  
20 Owner says, ah, this is significantly larger.

21 Now, we don't know why it's significantly larger. We don't know  
22 why even if you go down this road, slightly larger than isn't substantially the  
23 same size. Much like the issue with the *Weimer* reference, we know the  
24 Patent Owner says substantially the same area has to be something that is  
25 apparently like 100 percent perfect matching. Because if you're slightly

1 larger than or you're slightly small than, you're outside the scope of this  
2 claim.

3 So, again, Patent Owner didn't address that. Instead, just argues  
4 *Imai*'s slightly larger than. But even then, if we went down that road, it  
5 seems as if it would fit within the construction they're proposing.

6 And this is slide 27 of our demonstratives. And you'll see again  
7 there's -- on the left side that is Patent Owner's construction: they should be  
8 substantially the same area. There's *Imai*'s paragraph 101 that they cite to  
9 and bring up: it appears as if you're slightly larger than, you are  
10 substantially the same area. And by the way, that appears also very  
11 consistent with columns 5 and 6 that Patent Owner cited for support for its  
12 construction, where it can be slightly larger than. Again, that middle of  
13 column 5, it's almost like it's the text of *Imai*.

14 And so our response here was *Imai* does teach this. *Imai* has this  
15 express disclosure. Our petition on page 69 even said, by the way, you'd be  
16 motivated to make that match. But even if we go down this narrow road,  
17 even if we have to respond to what you're saying about *Imai*, in that scenario  
18 *Imai* still teaches this.

19 So unless there's any questions about *Imai*, I'm going to briefly touch  
20 upon the *Weimer* ground for coincident with.

21 So on slide 29, you'll see that we're discussing the *Weimer* ground.  
22 That ground relates only to the '750 patent. It's only to the 7 -- sorry, 01457  
23 case. And there *Weimer* is the primary reference. The issue at play here is  
24 actually identical to kind of what we said above for the *Retterath* in  
25 combination with *Weimer* in that our petition brings up column 4, line 56.  
26 We're telling them this is an express disclosure of being coincident with.

1 They don't really address it. They bring up the bodily incorporation of  
2 *Weimer's* figure 2A and 3A, and say we're going to rely upon that bodily  
3 incorporation and, look, they're not substantially the same area. And we, of  
4 course, bring up the same response, which is on slide 30 of, you know,  
5 *Weimer's* telling us that the goal is only -- is -- you know, if you're not going  
6 to be this corresponding to option in column 4, the goal is to be only slightly  
7 smaller than and that appears to be substantially the same area. And again,  
8 Patent Owner won't tell us where that line is and this magical word  
9 "substantially." All we know is that if you're slightly smaller than or you're  
10 slightly larger than, apparently you are not substantially the same area. It is  
11 left for the public to suffer and decipher it on its own.

12 So that is the coincident with issue. If there's no questions there, I'm  
13 going to move on to the adjacent to issue, which, again, relates to all the  
14 independent claims in this case.

15 So slide 32 shows examples of the claim language. Now, what's  
16 important to note here is that the adjacent to issue is not really a contest of  
17 whether having one lens adjacent to the other was somehow this innovative  
18 concept at the time. But instead, that is, if you actually look at the  
19 background section of our petition we bring up that, you know, Velodyne  
20 had this kind of famous LiDAR system and they had the side-by-side lenses  
21 there. There's also testimony from Dr. Shanley, I believe it's around  
22 paragraphs 156 or 158. It's cited in the context of the adjacent to limitation  
23 that, in fact, this was ubiquitous. This is how the systems were built. So this  
24 is a world that the person skilled in the art is just saturated in. Is that, yeah,  
25 all these systems, if you have all of your emitters and all of your detectors, if  
26 the emitters are all grouped together and the detectors are grouped together,

1 everybody builds these with side-by-side lenses. That's how you get this  
2 compact design. That's the world that in 2015 this person skilled in the art is  
3 reading *Retterath*.

4 And so on slide 33, what does *Retterath* say? Well, at the top left  
5 side is figure 6. And there on the top right side of slide 33 you'll see that in  
6 the context of figure 6, *Retterath* is telling you, you know, there's this  
7 plurality of emitted elements 100. They're all next to each other, they're  
8 grouped together. And it's good to use this macro lens 80 and that macro  
9 lens 80 in *Retterath* has these actuators at the ends of it and it can be  
10 electronically controlled, so it's kind of fine-tuned. It's very advantageous  
11 when your detectors are all grouped together. This is a great option for you.  
12 And that's column 9 of *Retterath*.

13 Slide over to the next column, column 10, and *Retterath* does the  
14 same thing for the detectors. That's in figure 10 of *Retterath*. That's the  
15 pink shading on slide 33 there. And *Retterath* says again, when you have  
16 your detector elements 200, when they are all grouped together, there's this  
17 option that's really helpful: you have this macro lens detector 230, and that,  
18 again, has these actuators on it and it can be electronically controlled and  
19 you can fine tune your directors -- I'm sorry, your detectors 200 when they're  
20 all grouped together and it's this great advantage.

21 In the same column *Retterath* later brings up, in column 10 of column  
22 10, now I want to refer to figure 11B. This is a physical device layout. And  
23 so they're showing us where a group of emitters 100 and where a group of  
24 detectors 200 can be located as an example. And so, again, they're all  
25 grouped right next to one another. If you took a cross-section through all of  
26 those 100, it would look like the cross-section that you were seeing in figure

1 6. If you took a cross-section of those detectors 200 it would look like a  
2 cross-section that you're seeing in figure 10. And that's the evidence that we  
3 were at at the time of our petition.

4 And you will see that Dr. Shanley on slide 34, you know, was  
5 testifying that, you know, this is how a person of skill in the art is going to  
6 read these; that they are, in fact -- by the time you get to figure 11B, you  
7 already have the context of figures 6 and 10 and you know what you want to  
8 do when they are grouped together. I will note, by the way, that *Retterath*  
9 also says in column 20 -- the Board cited this in its Institution Decision for  
10 the 01457 case. And column 20, *Retterath* expressly says, by the way, the  
11 embodiments, you know, can be combined. This is why I'm drawing them,  
12 you know, this way.

13 So what does the Patent Owner say? The Patent Owner's response is  
14 quite interesting. This is on slide 35. Again, we're still in column 10. We're  
15 still in the same exact column where we just got done describing figure 10.  
16 And all these detector elements are next to each other and why it's great to  
17 have the macro lens 230. Right after that, *Retterath* dives into figure 11A,  
18 which is a one-off example. And it's shown here on the left side of slide 35.  
19 And there, if you notice, my emitters 100 are not next to one another.  
20 Rather they are -- each emitter is next to its own detector 200. And if you  
21 imagine the spacing between 100 and 200, it's minimal. In fact, it's as  
22 minimal as it can be physically. If I move them any closer, they might be  
23 overlapping.

24 And so *Retterath* says in this paragraph related to figure 11, you  
25 know what's a good idea here is a single global lens. And *Retterath* is pretty  
26 clear that says the reason you can use this, right, is the distance between

1 your emitter and detector pair must be minimal. Now, you can read  
2 *Retterath* and you'll notice that the words "must be" do not appear very often  
3 in *Retterath*. This is something that would be picked up by a person of skill  
4 in the art, they must be minimal. And when I do that, that makes sense, by  
5 the way, because if you imagine my overall device, take a circle and put it  
6 right over the left side of figure 11A, where the 100s and the 200s are, right,  
7 that circle would be my single global lens. It would actually be quite a small  
8 device. You can see why the compactness would work there.

9 Now, *Retterath* does full stop, next paragraph. Now let's refer to  
10 figure 11B, and this is what we cited on the previous slide. And here  
11 *Retterath* is going to -- now there's this different physical layout, I'm no  
12 longer using my single global lens. My 100 and 200 are no longer next to  
13 one another. Rather they're in a first arrangement in 248 and in a second  
14 arrangement 246, and they're next to one another. In other words, let's go --  
15 you know, now you're back into the context that I just got done describing  
16 with figures 6 and 10.

17 And by the way, having the lenses next to each other, the one over  
18 the 200s and another one over the 100s makes a lot of sense. You have to  
19 get a very compact device. I want you to imagine for example a giant circle.  
20 One circle that has to cover all of the 100s and 200s. Think of what that  
21 single global lens would be. It would no longer be a compact device. Over  
22 half your lens would be covering these electronic sections 244. A person  
23 skilled in the art would know that's not what's happening here. Again, you're  
24 bathing in the world of having side-by-side adjacent lenses, like the  
25 Velodyne device, like the *Pacala* reference which we do cite as an  
26 alternative 103 ground, which was actually owned by the Patent Owner here.

1           And so that's the world we're in, which is Patent Owner's theory of,  
2 no, this single global lens is somehow going to be incorporated into figure  
3 11B. It's just not accurate with the state of the art. It's not accurate with  
4 substantial evidence and the repeated testimony. By the way, it's multiple  
5 paragraphs and multiple declarations from Shanley on this.

6           I will note that in the '381 IPR we do mention that there's this  
7 alternative 103 ground, which is even if you didn't believe for some reason  
8 that these lenses 80 and 230 could be next to one another like was done in  
9 virtually every commercial device at the time; that the *Pacala* reference  
10 provides a suggestion for doing so. When you read the Patent Owner's  
11 response there or the surreply, it basically comes down to, well, because  
12 *Retterath* expressly say in the context of figure 11B, yes, I want to also use  
13 figure 6 and figure 10, that then you can't use *Pacala*'s suggestion, which is  
14 not how a 103 combination works. *Pacala*'s suggesting the side-by-side  
15 arrangement because it gets you that compact device.

16           Again, imagine a single circle over figure 11B, the 100s, and a single  
17 one over the 200s. You get that compact device. That's what the motivation  
18 and the purpose of all of this is.

19           So with that being said, I'd like to -- unless there's any other  
20 questions, I will turn to the "adjacent to" issue on *Imai*.

21           Okay. So the *Imai* "adjacent to" issue is even more straightforward  
22 in my view because all it takes is kind of a basic 1990s engineering or  
23 architect understanding of orthogonal views and it all comes together. So in  
24 slide 38 you'll see that, excuse me, in our petition we cited to *Imai*'s figure  
25 2C. And 2C is shown on the top left of slide 38. And there it's -- on the left  
26 side of that image you'll see there's an X-Z plane and you'll notice that there

1 is a lens 22 and in the X -- I'm sorry, the Z direction, it's directly adjacent to  
2 a corresponding lens of the receive optics 30. And we note that in the  
3 petition that, in fact, in that Z-axis direction they are adjacent to one another.  
4 And we cite two portions of *Imai* that I think are very helpful here.

5 Now, what I do want to note, something that's important on this  
6 slide, is the Patent Owner, their surreply, this is the bottom of slide 38, their  
7 surreply notes that somehow we're relying upon this improper new reply  
8 argument and they cite to *Intelligent Biosystems*. And that's just a wildly  
9 inaccurate view of *Intelligent Biosystems*. There's no easy way to say that.

10 So what's important to note here is that we noted this in our original  
11 petition. This is figure 2C. We also cite the 2A. We cite all the paragraphs  
12 I'm going to bring up. So this isn't new. We're not grabbing a new  
13 secondary reference out from another and adding it in to make a new 103  
14 combination, which is the problem in *Intelligent Biosystems*. That's never  
15 happening, in fact, for any of our grounds. Anytime you see them citing  
16 *Intelligent Biosystems*, you should know we are not going out and grabbing a  
17 new secondary reference and tacking it onto a previous ground. We are not  
18 going out and grabbing some new motivation to combine that was never  
19 articulated in our petition. None of that's happening. The *Intelligent*  
20 *Biosystems* facts are not happening here.

21 Instead, what's happening here is either, A, we're pointing to our  
22 original petition or, B, we're relying upon the *Apple v. Andrea Electronics*  
23 precedent and the *Axonics v. Medtronic* precedent. Now, these are two cases  
24 that occurred after *Intelligent Biosystems*. They refer to *Intelligent*  
25 *Biosystems*, they contain *Intelligent Biosystems* to the proper view. And  
26 more importantly, unfortunately, in those cases, they vacated the Board

1 decisions for refusing to consider reply evidence. Because in *Apple v.*  
2 *Andrea Electronics* it says that when a Petitioner's reply is responsive to a  
3 particular argument, of course that should be considered. And *Axonics*,  
4 which might be, you know, actually more pertinent here for a lot of cases,  
5 *Axonics* is saying when the Patent Owner is raising a narrow claim  
6 construction or narrow view of its claim, of course the Petitioner's reply  
7 should present arguments and evidence to respond to that. And so virtually  
8 every time Patent Owner is citing to *Intelligent Biosystems*, it's taking a view  
9 of *Intelligent Biosystems*. I'm going to call it an old view, a pre-*Apple v.*  
10 *Andrea Electronics* view, or a pre-*Axonics v. Medtronic* view, that if you  
11 walk that path, you're going to be walking into the buzzsaw of these two  
12 precedential decisions.

13           So what did the Petitioner -- or I'm sorry, what did *Imai* say? Let's  
14 turn to slide 39. *Imai* -- again, all this was cited in our petition. *Imai's*  
15 paragraph 31, it says it's really important that you understand figure 2 with  
16 appropriate reference to the XYZ three-dimensional orthogonal coordinate  
17 system. Well, how does that work? So Dr. Shanley, you know, walked us  
18 through this and tried to walk everybody through it, but you basically take  
19 figure 2A and you stack that on top of figure 2B. And if you do that, that  
20 mirror 24 and the other mirror 26, you know, you can align those up  
21 perfectly, one on top of the other, because they're all -- that's the same  
22 mirror, right? And when I do that, my laser diode array, the LDA, in figure  
23 2A is going to be directly above my PDA, or the photodiode array, right?

24           So now I have that stack. I've put 2A on top of 2B. Now I'm going  
25 to take a cross-section. I'm going to go right to the center of my LDA and  
26 my PDA. And when I look at that cross-section, that's how you read an

1 orthogonal view, I'm now looking at figure 2C. And so here's what I know.  
2 I know that that is why that lens 22 is indeed adjacent to the other lens in the  
3 optic system 30. In fact, in paragraph 39, that's why *Imai* expressly says  
4 that's why these are overlapped in the Z-axis direction. So not only --  
5 honestly, the figures alone could get you there, but *Imai* actually says it out  
6 loud, too.

7 And so to us this isn't really a contest outside of just trying to set  
8 Patent Owner's experts straight of, you know, you might be misreading the  
9 orthogonal system here. And that is not anything new that the axis in each  
10 lane (phonetic) in figure 2C is enough to get you there.

11 So unless there's any questions there, I'd like to address the -- briefly,  
12 the adjacent to issue for the *Weimer* grounds, which is, in my view, a  
13 relatively minor issue based on a typo.

14 Okay. So I will move on to that. Now, again, the *Weimer* grounds  
15 relate only to the 1457 case. It's ground 3 in that petition. And the entirety  
16 of this argument relates to -- if I had to summarize it in one sentence, it  
17 would be the Patent Owner wants you to look at page 76 and pretend page  
18 73 of the petition doesn't exist. Read that fragment and put on blinders for  
19 the rest of it. So here's why.

20 If you look on the left side of slide 42, element 44B recites a bulk  
21 imaging object. And our petition at page 73 was extremely clear, for  
22 element 44B, you should look at *Weimer*'s receive object 322. That's what  
23 we're relying upon for that structure. And there's -- by the way, never  
24 disputed by anybody. So element 44C -- I'm sorry, 44E in the left side of  
25 slide 42, there's a second lens that's introduced, a bulk transmitting optic.  
26 And if you go to the right side of that slide, you will see that for element

1 44E, we are pretty clear the bulk transmitting optic is *Weimer's* receive  
2 object 318. And if you really wanted to go look at *Weimer*, look at the top  
3 of slide 42, these two lenses are described in the same sentence. And so it's  
4 not a mystery. What is the structure that is the bulk imaging optic? 322.  
5 What is the structure that is the bulk transmitting optic? 318.

6 Now, there is a typo. At the very bottom of slide 42, you'll see the  
7 very last three words. It says, "transmit optic 31." Now, what should have  
8 been done there is it should have copied the claim language to say "imaging  
9 optic." That way it would say, "disposed adjacent to the bulk imaging  
10 optic," copying that last fragment of 44E. That typo is there. That's true, but  
11 it doesn't change what we are relying upon for the bulk imaging object.  
12 That's not really a question. So that's the whole issue here, is Patent Owner  
13 wants to somehow just lean on those three words, "transmit optic 31," as  
14 being somehow making the rest of position indecipherable. And to us, that's  
15 not really a legitimate position.

16 What I will note, also, is we do cite in that same part to figure 3A of  
17 *Weimer*, and you'll see the lens 318 is adjacent to the lens 322. This is on  
18 slide 43 of our demonstratives. The Patent Owner eventually ends up  
19 making a big deal about saying, well, we don't know if figure 3A has gone to  
20 scale, but in the end --

21 JUDGE CHERRY: So, Mr. Hawkins, so that should be -- so that last  
22 three words on the bottom, that portion from the bottom of slide 42, should  
23 just be "adjacent to the receive optics 322?"

24 MR. HAWKINS: No. Yeah. So if you look at the very end, look on  
25 the left side of slide 42.

26 JUDGE CHERRY: Yeah.

1 MR. HAWKINS: Element 44E. So "adjacent to the bulk imaging  
2 optic," those last three words, "bulk imaging optic," that's what (inaudible).  
3 It's just -- it's supposed to be a copy of the claim language.

4 JUDGE CHERRY: Oh, I'm sorry.

5 MR. HAWKINS: Yep, that's all it was supposed to be. And then if  
6 you really want to know what we're relying upon for that structure, you  
7 should go to element 44B where we make it abundantly clear. So that's, you  
8 know, where that typo exists. You know, again, we apologize for that, but  
9 we did -- we feel as if page 73 is fairly clear as what structure that should be.

10 So, again, they make a big deal about *Weimer's* 3A not being to scale  
11 or we don't know if it's to scale or not. Even if, let's say, it wasn't, let's say  
12 318, the lens, should be a little bit wider or the lens 322 should be a little bit  
13 narrower. It doesn't change that what's happening if these lenses are still  
14 next to one another. The sizes, the relative sizes could be different, I  
15 suppose, but it doesn't change what's happening here. And again, the  
16 adjacency of these lenses is just -- that's how these -- just commercially all  
17 these devices work, just like the Velodyne device described in the beginning  
18 of our petition.

19 So with that being said, that ends kind of that discussion of the  
20 overall commonality of the independent claims. There's one issue later on  
21 for the '750 I'll get to. But I would like to turn to claim 3, if there's no  
22 further questions.

23 This one appears to be elevated in importance because the Patent  
24 Owner's slides actually seem to start with this one rather than the  
25 independent claims. And so I'd like to really make sure that we have a good  
26 understanding of what's happening here.

1           So if you turn with me to slide 46, you'll see that slide -- claim 3  
2   recites that those emitters are arranged in a first arrangement and the  
3   detectors need to be arranged in a second arrangement that is proportional to  
4   the first arrangement. And in the context of the *Retterath* grounds, we noted  
5   this. This is on the left side of slide 46. You'll see Dr. Shanley's testimony  
6   where the substantial evidence is explaining, yeah, there's a first grid  
7   arrangement in this square rectangular section 248. And if you look at that  
8   square arrangement, there's a group of emitters 100. And then there is this  
9   second grid arrangement. It's the square arrangement 246. And if you look  
10   inside of that square arrangement, you will see there is this group of  
11   detectors.

12           The actual numbers, you know, aren't exclusive to figure -- model in  
13   figure 11B. Because *Retterath* says actually in the description of figure 11B,  
14   by the way, you can have this proportionality of your -- at square  
15   arrangement 248 and a square arrangement 246, you can have this where  
16   your detectors are proportional to your emitters. It can be, you know, a 1-to-  
17   1 ratio, it can be a 1-to-9 ratio, anything up to 1-to-25. Right? So there is a  
18   proportionality there beyond the fact of these square sections are, in fact,  
19   their own arrangements that are similarly sized.

20           And so what is Patent Owner's position here? Well, the position is  
21   quite simple. On slide 47, you can see it. What you need to do is read the  
22   two-word phrase "scaling factor" somewhere in the claim 3. We need to  
23   import this from our specification. And so you could, for example, import  
24   this by saying proportional to the first arrangement and that they're related  
25   by a scaling factor or proportional by a scaling factor to the first  
26   arrangement. But no matter what, you need to read this into claim 3. And if

1 you enforce that into claim 3, suddenly there's a very specific type of  
2 proportional that is being required by claim 3. And so we responded to this  
3 in kind.

4 If you turn to slide 48, you'll see that we noted again two things.  
5 Well, actually slide 48 is one of the two things. The first is that you're  
6 missing that in our petition we did, in fact, note that it's not the numbers  
7 alone. There are these -- there's this square arrangement 248 and there's a  
8 square arrangement 246, and they are proportional to one another. In fact,  
9 they're literally the same size. And that, you know, *Retterath* then has this  
10 further disclosure of in -- within that numerically they can also be  
11 proportional to one another; in fact, they should be.

12 And then we went one step further. If you look in slide 48, we said,  
13 and by the way, even if -- even if -- we go down this road of your narrower  
14 claim construction, if we import scaling factor into claim 3, even if, then  
15 you're missing that *Retterath*, the same exact reference, not a new secondary  
16 reference, the same reference still features that. And so what we're  
17 essentially asking is responsive to your narrow claim construction, you  
18 should at least go revisit the primary reference. And that's exactly, by the  
19 way, what *Apple v. Andrea Electronics* says. That's exactly what *Axonics v.*  
20 *Medtronic* says, that precedent. That is entirely proper to do.

21 Parent Owner's position here is basically avert your eyes. No matter  
22 what, please don't read column 3 of *Retterath*. And no matter what, please  
23 don't look at the examples of disproportionality in figures 19 and 20 of  
24 *Retterath*. But that's not right. Their view of *Intelligent Biosystems*, again,  
25 is rather an archaic view. It doesn't acknowledge the precedent that, in fact,

1 we are merely responding to their narrow viewpoint of claim 3 and properly  
2 doing so, saying, you know, you need to look at the same exact reference.

3 We will not grab a new secondary reference and glue it onto our  
4 previous ground. That's not what we're doing. We will not create a new  
5 motivation to combine. That's not what we're doing. We're simply saying in  
6 your narrow view, (inaudible) by the same references. And that is entirely  
7 proper. And it is.

8 So *Retterath* here on the left side of column 3, you'll see that  
9 *Retterath* says, by the way, your emitter/detector sets, they can be a 16-by-  
10 16 array and they can be a 40-by-96 or 40-by-96 array. This is just very  
11 common, ordinary examples of how these LiDAR arrays were arranged.  
12 This isn't some invention that's worthy of patent monopoly.

13 Or if you went and looked at again in the context of figure 11,  
14 *Retterath* says, hey, your detectors 200 should be proportional to your  
15 emitters. And they say from 1-to-1 or 1-to-25. If you go look at figure 20, it  
16 shows you a 1-to-9 ratio. Literally, it's the exact same context. And if you  
17 look in there, it is this perfect columns and rows in figure 20. And so our  
18 point was you're missing the point of the references are still teaching this  
19 even under your narrow view. And it's entirely proper for the Board to  
20 consider *Retterath* for all that it teaches. It's entirely proper for the Board to  
21 consider reply evidence that is, in fact, responsive to your narrow view of  
22 the claim.

23 And so overall, again, you don't need to narrowly interpret claim 3 in  
24 the way they're demanding scaling factor be imported into claim. But if you  
25 did, it still makes no difference. *Retterath* still teaches it. And there is an  
26 ample amount of substantial evidence showing that.

1           If there's no further questions about the *Retterath* proportional to, I'd  
2 like to dive into the *Imai* grounds. And again, this is one of the last disputes  
3 for *Imai*. *Imai* has a very limited amount of disputes among it. And here I  
4 think the issue is even more straightforward. There's not even a question of  
5 looking at, say, a different part of a reference. We want to look at the same  
6 exact part of the reference.

7           And so slide 51 shows you our petition's view of ground 3. And  
8 again, we say according to that first predictable manner, so go look at pages  
9 66 and 67 of our petition, and there we're relying upon figure 10. I went  
10 through this before, the 1-by-4 vertically stacked array. And then we say but  
11 also there is a second predictable manner and that's the 1-by-16 vertically  
12 stacked array. And you know, see *supra*, ground 2A, that's highlighted there  
13 in the center of slide 51. That's the *Imai* ground. And go look at element 1E  
14 and you'll see that's pages 66 to 69. We went through all this above, right?  
15 So this is our petition. This is nothing new. We're not grabbing anything  
16 new out of here.

17           That part of the petition also cites to paragraphs 97 and 98 of *Imai*.  
18 And there you'll see *Imai* actually describes these as being arrangements.  
19 It's a vertically stacked laser array in the Z-axis direction, by the way.  
20 Again, Z-axis direction, very critical to *Imai*. Paragraph 98, those photo  
21 detectors vertically stacked array.

22           So here's what we know. We have a 1-by-4 vertically stacked array  
23 in figure 10 that matches and corresponds to its 1-by-4 vertically stacked  
24 array. We have the 1-b- 16 array in figure 11 that matches to its 1-by-16  
25 vertically stacked array. And so, yes, numerically they are proportional to  
26 one another. That is true. And that, in fact, does -- that is a version of

1 proportionality. Those arrangements are proportional to the one-to-one  
2 scale. But even if -- even if -- we go down their narrow view, why -- you  
3 know, if I grab figure 10 and I pinch and I enlarge it by a scaling factor of 2,  
4 why is my 1-by-4 array that's vertically stacked in the Z-axis direction still  
5 not proportional to my 1-by-4 array of the pixels? It still would match.

6 And so that was our position of this isn't making sense. Even if you  
7 went down that road, they're still teaching it. You know, you didn't even  
8 address the figure 11, the 1-by-16 array. And their response to not  
9 addressing figure 11 actually gets rather interesting.

10 So again, slide 52 of our petition -- I'm sorry, of our demonstrative  
11 slides. Even applying your narrow interpretation of proportional, forget the  
12 whole universe of being proportional, too. We want to just be a scaling  
13 factor version of proportional only. Even in that narrow construct, *Imai* still  
14 teaches this because, like I said, they are. I could enlarge this by a scaling  
15 factor of 2 and I would still have the same exact size proportionality, the  
16 spacing and everything.

17 And there's no -- by the way, we said you never even acknowledged  
18 figure 11 and didn't explain why this was that. And their response to that  
19 when we said you didn't acknowledge figure 11? Improper new argument,  
20 *Intelligent Biosystems*. Leaving us dumbfounded. It was in our petition and  
21 we're simply saying you're missing this. And again, *Apple v. Andrea*  
22 *Electronics*, even if it wasn't in our petition, we're responding to the narrow  
23 construction in *Axonics v. Medtronic*. There we have the text of *Axonics*  
24 quoted on slide 52. We hold that where a Patent Owner in an IPR first  
25 proposes a claim construction in the Patent Owner's response, a Petitioner  
26 must be given the opportunity in its reply to present -- or to argue and

1 present evidence of anticipation or obviousness. It's exactly what we'd be  
2 doing here even if it wasn't raised in our petition, but it is.

3 And so in the end, *Imai* does teach this. Even in the scaling factor  
4 spatial proportional, *Imai* has this. And we're left wondering if this isn't a  
5 scaling factor arrangement, we don't know what is.

6 JUDGE CHERRY: Mr. Hawkins, is there disclosure in the spec about  
7 this proportional?

8 MR. HAWKINS: In the *Imai* specification or in the '381?

9 JUDGE CHERRY: In the '381 or '750 -- or I guess it's the '381.

10 MR. HAWKINS: Yeah. So the Patent Owner's response does point  
11 to portions of the specification that use the words "scaling factor." It's in the  
12 context of an embodiment or an example. It's not in the context of, say,  
13 lexicography, you know, "as used herein" or "proportional to" must mean  
14 scaling factor. And so, you know, we don't doubt that. In fact, that's why,  
15 you know, we also think that it was extremely common. That's exactly what  
16 *Imai* was doing. That's what *Retterath* is -- you know, they have the  
17 rectangular sections and they have a wide variety of numerical  
18 proportionality. If you pick the 1-by-9 proportionality, you would end up  
19 with figure 20, which then has the perfect rows and columns.

20 And so it's neither here nor there. The examples in our *Imai* and  
21 *Retterath* are the example that's in the '381 for scaling factor. It's just a  
22 matter of if they wanted the two-word phrase "scaling factor" to be in claim  
23 3. Well, there was a motion to amend that they had an opportunity to do so  
24 and they said, no, thank you.

25 JUDGE CHERRY: I mean how would -- how do you understand  
26 scaling factor to be different than number -- proportionality of number?

1 MR. HAWKINS: That's a very good question, Your Honor. I'm glad  
2 you asked. So I think of -- they're very, very closely related and so that's  
3 why it's hard to answer. Again, if you look at *Retterath's* figure 20, when I  
4 go to a 1-by-9 ratio, I am going to have that perfect kind of alignment of my  
5 columns and rows with a dead center pixel. And so numerically, sometimes  
6 there is, in fact, a perfect scaling factor proportionality, too. Sometimes  
7 there could be a numerically where they wouldn't be, where you could have  
8 these offset grid arrangements. But even then, what's important to note -- so  
9 the Patent Owner's response, let's take a look at the -- they provide a graphic.

10 I'll note that, you know, they basically start from the assumption that  
11 *Retterath's* figure 11B is just this fixed scenario and you couldn't possibly  
12 have any other arrangement of your detectors in there, which is not what  
13 *Retterath* teaches. But then -- I apologize, I'm trying to find their image of  
14 it. Oh, it's page 40 of -- I'm sorry, page 43 of their Patent Owner's response  
15 in the '381 IPR. There they're showing these two grids where one is an  
16 offset grid.

17 Now, again, in that scenario what's important is *Retterath* has these  
18 directional vector lenses, right? And so there's a reason why you can  
19 arrange them offset. And also *Retterath* contemplates that groups of these  
20 detectors can share one pixel. And so there's a reason why, even though in  
21 the grid they might be offset, in theory, if I took one and a larger bias scaling  
22 factor of 2 and took the other one in a large bias scaling factor 2, my system  
23 would still work in *Retterath*. The directional lenses would still be directed  
24 in that same position.

25 So, you know, I think they're trying to make hay out of something  
26 that's not there because it's really just you pick your proportionality. If you

1 pick the right number, you know, which *Retterath* literally shows a picture  
2 of in figure 20, then, in fact, you do have this perfect alignment of your  
3 columns and rows. And we think, by the way, that the square arrangements  
4 in and of themselves in figure 11B are an arrangement that has a size  
5 proportionality and that has a numeric expressly disclosed proportionality.

6 JUDGE CHERRY: Thank you.

7 MR. HAWKINS: I'll briefly touch upon the stop region elements.  
8 And then there's a dependent claim 7 that calls it an opaque structure.

9 There's two main points I want to make here. So let's turn to slide  
10 54. You'll see that claim 6, we cite that your aperture layer has a stop region  
11 in the '750 patent. And claim 44 it says the aperture layer has a stop region.  
12 The Patent Owner's construct -- position is similar to what we talked about  
13 for claim 3. In the lower left side of slide 54, you'll see it. They are  
14 basically saying that you need to read the two-word phrase "stop region" to  
15 include an opaque structure. It requires an opaque structure. So take the  
16 two-word phrase "opaque structure" and paste it somewhere to claim 6.

17 We, of course, say that this is improper. You shouldn't be doing that.  
18 But more importantly, if you look on slide 55, *Retterath* in our view teaches  
19 this. And this is amply briefed, I think, and there's a lot of testimony from  
20 Dr. Shanley in both of his declarations on this. But *Retterath* says that this  
21 inbound optical energy, all the energy, just environmental light and  
22 everything, right, that if you're not going through that transparent region 222  
23 in *Retterath*, you're hitting that material 215 and it's going to be substantially  
24 blocked.

25 And the two things I want to bring out, because there's ample  
26 evidence, you'll see it on the right side of slide 55 that this -- you know, the

1 whole purpose of what *Retterath* wants to do here is to block that light. Of  
2 course, if there was just environmental light going right through 215 and  
3 hitting your detectors, you would have all kinds of an inoperable system.  
4 That's not what *Retterath* wants.

5 Here's the two things I want to bring up, though, that aren't -- that  
6 might not come alive if you just read through the briefing all today. If you  
7 turn with me to slide 57, our position on this was in full agreement with  
8 Patent Owner. Roughly a year ago today, they provided a Patent -- a  
9 preliminary Patent Owner's response. And they told you, Board, Patent  
10 Owner told you, not us, that the entire purpose of *Retterath*'s waveguides is  
11 to block the light. It's Patent Owner's words, not ours. And they're reading  
12 the same exact part of column 9 we are.

13 Then you went to two IPRs, six months later, oh, the hold in July.  
14 Slide 57, just kidding. That waveguide is semitransparent now. And so  
15 that's one inconsistency among the Patent Owner of where, you know, I just  
16 think there's not -- they were reading "substantially blocking" accurately and  
17 suddenly they're not anymore.

18 But then turn with me to slide 58 because within that same document  
19 that occurred six months later, within the Patent Owner's response, the word  
20 "substantially" can mean exactly the opposite of the word "substantially,"  
21 apparently, in their view. So if you look on the right side of slide 58, you'll  
22 see that they're talking about their claim construction and they say the reason  
23 we need our area to match, it's very important that they match. And the  
24 reason you know it means matching is because we say substantially  
25 matching. In other words, substantially matching includes a teaching of full  
26 perfect matching.

1           Interesting, because you go forward 19 pages in the Patent Owner's  
2 response and they say, oh, *Retterath* does substantial blocking, which must  
3 exclude full perfect blocking. The same word, two opposite meanings in  
4 their mind in the same document. And to us, that's just -- well, A, it  
5 highlights the problem with their claim construction of substantially the  
6 same area, but, B, it's not an accurate reading of the way a person of  
7 ordinary skill in the art would read this.

8           Finally, I'll note also on the stop region -- or the opaque issue on  
9 claim 7 is the same. It's substantially blocking. That's the whole point of  
10 what they're trying to do. But we do bring up an alternative ground based  
11 upon *Hipp*. There's three layers here. They take the third layer and try to  
12 bodily incorporate it. And I want to hit the first two because it's not really  
13 squarely addressed by the Patent Owner's response.

14           The first is in our petition, not our Petitioner's reply. This is slide 60  
15 of our demonstratives. We say that in this resulting system that suggested  
16 shadow mask of *Hipp*, this alternative ground, it would be in addition to that  
17 waveguide material 215. Now, if you look at the middle of column 10 of  
18 *Retterath*, it's right around *Retterath* I want to say lines 10 or 11 -- column  
19 10, lines 10 or 11, it tells us that waveguide material 215, it wants to be  
20 nonreflective. And photons, go and hit your sensor and somehow bounce  
21 around, that material 215 is going to gobble it up and absorb it. There's no  
22 bouncing around the photons in my 215. That's the primary reference. And  
23 we're simply saying the shadow mask can be with that. So now that's layer  
24 one of even if I apply this shadow mask, what about *Retterath* 215? Why is  
25 that not blocking this bouncing around problem they raised?

1           The second is turn with me to slide 52. This is -- the left side is  
2 column 21. The bottom of column 21 is *Hipp*. *Hipp* says your shadow  
3 mask can be done in two different ways. They pick one, bodily  
4 incorporated, and say there's going to be a problem. Again, a straw man,  
5 bodily incorporation. *Hipp* says you can do this in two ways. You can have  
6 your shadow mask be this mirror-coated layer or your shadow mask can be  
7 this impermeable material.

8           So if you go to the next column, column 22 of *Hipp*, *Hipp* says, by  
9 the way, when you use that mirror layer, there's sometimes this bouncing  
10 around of photons, this to-and-fro reflection. Right? But that's in the  
11 context of the mirror layer. Why would the person skilled in the art, if that's  
12 what they're truly worried about, simply use the other option that *Hipp* says,  
13 this intermediate material? We have no idea that -- there's no explanation as  
14 to what the shortcoming is there.

15           And then we said one step further, which is fine. Let's even if we're  
16 going to properly respond to your narrow straw man, we are going to bodily  
17 incorporate this mirror layer, right, even if we go down that road, we're not  
18 suggesting any sort of astounding new modification. What they're saying is  
19 look at column 22 of *Hipp*. There is this mirror layer and it creates this  
20 problem. And so, therefore, in their world, the ordinary engineer would run  
21 away saying it's inoperable and I can't do this. And in our world we're  
22 saying no, the engineer would read literally the next sentence on column 22,  
23 which says, oh, yeah, if you're going to have that problem then just -- And  
24 just make it non-reflective.

1           You know, so that's neither here -- that's a perfectly responsive  
2 argument that they say is not apropos. But more importantly, it's only  
3 responding to this very narrow version of their view of *Hipp*.

4           JUDGE JURGOVAN: Counsel, I have a question for you on this  
5 *Hipp* shadow mask. I think one of Patent Owner's arguments is that *Hipp*'s  
6 shadow mask is built for APDs and wouldn't work with SPADs. Can you  
7 add any color to that?

8           MR.HAWKINS: Sure. So the reason they are saying that is, again,  
9 this issue that *Hipp* brings up on the top of column 22, which says that  
10 sometimes a photon can come and somehow reflect off your detector and it  
11 would bounce around in your -- in that aperture layer material. Right? And  
12 while that may work for APDs, it doesn't work for SPADs.

13           And again, our point there is threefold. The first is that *Retterath* has  
14 a waveguide material that is already absorptive and we're simply putting --  
15 *Hipp* has a suggestion of you know, what's great is perfect opacity. Let's put  
16 that layer on there. Right? And so the resulting combination that's in our  
17 petition, again, slide 60, that resultant combination doesn't have that  
18 problem. SPADs or no SPADs, you don't have this issue. You're absorbing  
19 any reflective photons.

20           Second, slide 62, *Hipp* provides two options, mirror-coated or  
21 impermeable material. And then the problem that they bring up on the very  
22 next column, point 2 about this reflection of the photons that would create a  
23 problem for SPADs, A, there's no disclosure that the impermeable material  
24 would provide that problem, but, B, the very next sentence says it's not that  
25 big of a deal. You just put a nonreflective layer on there. And so that's  
26 what's brought up in our Petitioner's reply, you know, that they're

1 overlooking parts of our case in chief and that even if you go down this road,  
2 it's still not that -- this isn't some sort of amazingly inventive, you know,  
3 innovation. It's something that *Hipp* in the next sentence resolves. I think  
4 it's perfectly appropriate for a person of skill in the art to look at.

5         So I'm running up against time and I'll try to address a couple of  
6 other issues, but I'd like to jump down, if I can, importantly to slide 71. And  
7 I just want to introduce the issue of our position about Patent Owner's expert  
8 perhaps having not a complete skill set for LiDAR design. And we don't  
9 take this lightly. We do think Dr. Janet is very skilled at the areas of the  
10 vehicle design that he has experience in. But I also want to bring up in the  
11 context where this came from because the timing of it I think is pretty  
12 critical and will help a lot.

13         And so if you will -- and by the way, it's connected to their  
14 arguments about Dr. Shanley. And if you will, turn with me briefly to  
15 Exhibit 1040. This is the -- I'm sorry, no, 1041. This is the deposition of Dr.  
16 Janet and -- 1041, page 13. So I'm going to actually call it up on my screen  
17 here, also. So on page -- actually it's page 10, you'll see we ask him, hey, we  
18 know that you rely upon figure 1 for your claim construction. Can you  
19 please tell us what's happening? And he does, instantly, no obfuscation, no  
20 questions, he answers about figure 1.

21         Page 13, we say that's interesting. We think the Board would really  
22 love to know Patent Owner's view of figure 2. It seems to be pretty critical  
23 to resolve in a claim construction issue. So, surely, he would want to tell us  
24 about that, too. And so on page 13, at the very bottom, line 23, we start  
25 asking him about what's happening in figure 2? You see those lines coming

1 out of number 111 and it's bouncing off and all of them are going back to the  
2 defector?

3 We go on. Now, we cited to page 29 to say he didn't really consider  
4 this. Page 13 to 37, 24 pages of follow-up questions. Can you please tell us  
5 what you think of figure 1 or figure 2? Please tell us what's going on with  
6 these lines. Zero substance, zero. Just I relied upon figure 1. I relied upon  
7 figure 1. My opinion is about figure 1. That is an example of one of two  
8 things. Either, A, he's refusing to answer, refusing to be cross-examined, or,  
9 B, which is our concern, he might not know.

10 And so we dove in a little bit further and we looked at the declaration  
11 and we realized, you know, there's kind of light on. There is ample evidence  
12 that he worked, he was a team leader for like an ATV vehicle project. And  
13 there was all kinds of sensors. There was a GPS sensor, there were these  
14 cameras, there was a LiDAR sensor. If he could buy the LiDAR sensors off  
15 the shelf, he did. And so we raised that. We said, you know, these ATV  
16 giant vehicle projects, they seem great, they seem lengthy. It doesn't mean  
17 he worked on LiDAR design for two years. To be quite honest, if you add  
18 up the various weeks of when he might have been picking LiDAR sensors, it  
19 might not add to a full year of LiDAR design. And so we raised that. And  
20 the *Kyocera* precedent of this appears as if we're falling into this *Kyocera*  
21 precedent problem.

22 And the reason I want to bring up pages 13 to 37, 24 pages of  
23 refusing to answer follow-up question after follow-up question is because  
24 Patent Owner brings up the idea that Dr. Shanley refused to be testified -- or  
25 refused to be cross-examined. And I would like to compare that briefly  
26 because it's important. If you turn to Exhibit 2020, I'll bring that up on the

1 screen now. There is -- page 37 is an example that they lean on pretty  
2 heavily of this exchange. Let's see if I can zoom in here. Hopefully, you  
3 can see this exchange on page 37.

4 Dr. Shanley, by the way, his first deposition went fine. No complaints  
5 as far as we can tell. But because of the way they didn't answer -- he didn't  
6 like -- they didn't like the answers in the second deposition, they want, by  
7 the way, they were requesting both declarations be excluded, which is a  
8 remarkable request. But what's happening here? So they -- Dr. Shanley's  
9 deposition had to be rescheduled. And it was very kind of Patent Owner to  
10 allow us to do that. Unfortunately and sadly, his wife was dying in the  
11 hospital. He was spending overnights in the hospital. Sadly, actually shortly  
12 after this deposition, the next month, on Christmas Day, she died. Dr.  
13 Shanley is now a widower.

14 And so he's brought to an in-person deposition. They don't want to  
15 do remote. And so he's here. Now he spends -- first of all, importantly, the  
16 context of what was he refusing to answer. There's three points. Page 60 of  
17 the deposition, let's bring that up. Here we are, page 60. There it is, page  
18 60. The entire deposition was an hour and 58 minutes long. That's it.  
19 Patent Owner had hours to ask more backup questions.

20 Second, if you add up that time and you look at this transcript, right,  
21 pages 1 to 30 aren't them asking about the grounds or the claim construction  
22 or anything that requires expertise. It's them jamming in Exhibit 2019,  
23 which is a transcript from a different case, to try to bolster Dr. Janet's skill  
24 set. And if you read those pages 1 to 30 of this Exhibit 2020, you'll see Dr.  
25 Shanley saying, I don't know, it looks like he's designing a vehicle and  
26 maybe spending a couple of hours here and there on sensors. But that's it.

1 That's the majority of this deposition. So realistically, let's say roughly, you  
2 know, 50, maybe 45 minutes were spent on any substance.

3 So now let's go to this example on page 37 that they bring up. So  
4 here he is, he's brought in for this in-person deposition and they are asking  
5 him a question. And really it kind of starts on page 36, I believe. And  
6 they're saying, you know, you mentioned *Retterath* does not disclose any  
7 embodiments or examples where the size of the emission region is more than  
8 slightly different. And he explained, yes, and here's why. And here's where  
9 I pointed to. And that's not -- they cite this page 37.

10 The next question they are asking him, will you please perform a  
11 glorified control F search function, right? So it says, "So sitting here today,  
12 do you know if *Retterath* uses the two-word phrase slightly different?"  
13 Now, Dr. Shanley, in his view, is probably thinking clearly, look at my  
14 expertise. They want me to go through all the parts of the specification of  
15 *Retterath* where, you know, it's, you know, describing this non-difference  
16 that these things are the same area. Right? And -- but he's not thinking, oh,  
17 they brought me here to perform a glorified control F search that a high  
18 school student could call up the text of *Retterath* and answer in one second.  
19 That's not why they're bringing him here. But that's what they were. He just  
20 didn't see it that way. And so he says, well, this is too ponderous. You want  
21 me to, like, find every single sentence that's doing this.

22 Now, even if that's not what was happening or Patent Owner wasn't  
23 aware of that, importantly look at what happens next, line 19 of page 37.  
24 They don't ask a follow-up question. They certainly don't have 24 pages of  
25 follow-up questions. They say, moving on, next topic.

1           And so if you actually look at every instance of where they say he  
2 refused to testify, it actually he provides an answer. You know, I think I  
3 already answered this. This is in my declaration, let me -- you know, here's  
4 what I said. And they just say moving on because they wanted to get the  
5 whole thing done and all the merits in about 40 some minutes. And so that's  
6 not him refusing to be cross-examined. He did answer. He answered as  
7 honestly as he could and there was no follow-ups. So to me this is important  
8 context to understand.

9           They also bring up, by the way, this is even more interesting, that  
10 there was coaching. I believe on slide 3 of their demonstratives you're going  
11 to see there was coaching during cross-examination, which is a lofty  
12 allegation. So what happened is, if you actually look, his first deposition,  
13 not this one, there was a full cross-examination, then there was a we now  
14 end our cross-examination, and prior to redirect we simply tell him a couple  
15 of quick questions, no need to be lengthy, we can get you out here pretty  
16 quick, which is perfectly legitimate to say prior to a redirect. Now, A, I  
17 don't think that's coaching, but, B, even if it was, it would say there was  
18 coaching prior to redirect, not during re-examination, cross-examination.

19           And then there's some of thinking that he got that message back in  
20 July of 2024, memorized that coaching instance, in their words, and then in  
21 November is now seizing upon it, which is just an astounding allegation to  
22 take when, perhaps more remarkably, what happened was she saw that in the  
23 Patent Owner's response, for example, on the *Imai* adjacent two issues and  
24 on the secondary consideration issues, they were taking his testimony far out  
25 of context and it shocked him. That's actually what happened.

1           So with that I believe I reserved the rest of my time for rebuttal. I  
2   have a few extra minutes and I will save that for the time being. Thank you.

3           JUDGE CHERRY: Great. Thank you very much, Mr. Hawkins. Mr.  
4   Morton?

5           MR. MORTON: Yes, Your Honor. We'll get our slides up here in  
6   one moment. And I'm on Mr. Lauppe's audio. We're in the same room  
7   together here, so you know why it shows he's speaking when I'm speaking.  
8   But I'll try to make that as clear as possible for the court reporter.

9           All right. Thank you, Your Honors. Phillip Morton on behalf of  
10   Patent Owner Ouster. I'll be splitting the argument with Mr. Lauppe today.  
11   If you could go to slide 2, please.

12           This shows an overview of what we plan to focus on today. I'm  
13   going to start by focusing on claim 3 of the '381 patent, the dependent claim  
14   that we -- that Petitioner's counsel spoke about, and then also the "adjacent  
15   to" claim limitation in the '381 patent. And then Mr. Lauppe is going to  
16   continue on and discuss the remaining issues in the '381 patent along with  
17   any overlapping issues in the '750 patent and the unique issues of the  
18   benefits of the patent. Next slide, please.

19           So we were here a few weeks ago on the IPR involving the '405  
20   patent. That was IPR 2023-1421. And there we addressed a number of  
21   instances where Petitioner's arguments in the petition were inadequate and  
22   they tried to backfill that in the reply. And we saw a lot of that in the papers  
23   and we saw some of that here today as well. We heard figures cited today  
24   that weren't cited in any of the papers that I could find, such as *Retterath*  
25   figure 20. And then also during the reply phase, there were extensive

1 declarations put in by Dr. Shanley trying to backfill arguments that were just  
2 simply not addressed in the petition.

3 With respect to the depositions, today is the first time I'm hearing  
4 that Mr. Shanley's wife passed away. We're very sorry to hear that and we  
5 send our condolences to him. I'd ask, Your Honors, you can see the  
6 transcripts from Dr. Shanley and see the difficulty we had in cross-  
7 examining him in his reply declaration. I don't belabor that point here.

8 And with respect to the coaching, you can look at the transcript from  
9 the initial deposition of Dr. Shanley. After we completed our examination  
10 and their redirect occurred, there was a very extensive break, and there was  
11 what appeared to be coaching involved (phonetic). Next slide, please.

12 Okay. So I'll first address claim 3. This is a dependent claim of the  
13 '381 patent, which relates to the proportional arrangement issue in the claim  
14 language. If you go to the next slide, slide 5.

15 Slide 5 requires -- I'm sorry, claim 3 requires that this optical system  
16 have the plurality of optical emitters that are arranged in a first arrangement  
17 and a plurality of pixels that are arranged in a second arrangement where  
18 those -- where that second arrangement is proportional to the first  
19 arrangement. And it's very important to focus on the language "arrange" and  
20 "arrangement" because that was not what the Petitioner was focused on in  
21 the petition, go to the next slide, and in the *Retterath* reference, particularly,  
22 so slide 7.

23 In the petition, and this is from here on slide 7, we have the petition at  
24 page 30, the Petitioner is focusing on the arrangements being "proportional  
25 in number," not focusing on whether the arrangements are proportional  
26 themselves. And for the arrangements to be proportional themselves, that

1 means there's some sort of particular positioning or ordering of those  
2 detectors and emitters that must be present in order to meet that claim  
3 limitation. Next slide, please.

4 The same thing in Dr. Shanley's declaration at Exhibit 1003,  
5 paragraph 170. Dr. Shanley was focused on the arrangements being  
6 proportional in number, not whether the arrangements themselves were  
7 proportional. Next slide.

8 Our expert, Dr. Janet, he addressed this in his declaration at Exhibit  
9 2009, paragraph 144, here on slide 9, that a person of ordinary skill in the art  
10 "would have understand that the number of elements and the arrangement of  
11 those elements are different things." And this claim is about the  
12 arrangement of the elements, not the number of the elements. Next slide.

13 So here we have the *Retterath* reference here on slide 10. This is an  
14 excerpt of figure 11B. And first you see that in the emitters 100, those are in  
15 a first arrangement. It's a nicely formed 3-by-3 grid is an example that we  
16 pulled out here. And then on slide 11 it shows that the detectors, those are  
17 not in a proportional arrangement, they're in a different arrangement. So the  
18 arrangements here in *Retterath*, they are not proportional. Next slide.

19 And Dr. Janet addressed this and explained why someone would not  
20 -- a person of ordinary skill in the art would not believe that those  
21 arrangements are proportional because they don't have the same spatial  
22 relationships or pattern. That's here on slide 12, Exhibit 2009 at paragraph  
23 143 (inaudible).

24 JUDGE CHERRY: Where does your spec talk about this?

1 MR. MORTON: So I would direct you to column 14, lines 15 to 24,  
2 and the discussion that we have from Dr. Janet and his declaration at  
3 paragraph 142. Next slide.

4 And then here when we tried to ask the Petitioner's expert, Dr.  
5 Shanley, about this in his deposition, did not get a clear answer about what  
6 his understanding of the proportional arrangements are other than some  
7 numerical or scaling factor. Next slide.

8 We can see in the differences between the petition and the reply, in  
9 the petition the Petitioner was focused on the first and second arrangements  
10 being proportional in number. We talked about that a little bit ago. In the  
11 reply, now they're focused on the overall arrangement of the pixels or  
12 detectors and the optical emitters. So they're changing their position in the  
13 reply and we think that that's inappropriate. Next slide.

14 Petitioner goes further in the reply and actually tries to apply an  
15 obviousness argument that wasn't in the petition. And this is addressed.  
16 This is in the reply at 18 we addressed this in our surreply at page 18. But  
17 this obviousness argument about *Retterath* and that it would have been  
18 obvious to have these proportional arrangements based on *Retterath*, that's  
19 not in the petition. Next slide. And so we think it should be disregarded.

20 Let's go to *Imai* now with respect to the proportional arrangements in  
21 claim 3, slide 18, again focused on this numerical proportionality, not  
22 focused on there being some sort of spatial structural proportionality  
23 between the emitters and the detectors. Slide 19. This is Dr. Shanley again  
24 focused only on the numerical proportionality argument, not on whether the  
25 arrangements themselves are proportional.

1           Then on slide 20 we show in -- we reply, we're getting this new  
2 spatial arrangement argument just like we had with the *Retterath* reference.  
3 And in the reply they cite figure 11. That was newly cited in the reply.  
4 They did not rely on that in the petition for their argument about this claim  
5 limitation. They only relied on figure 10. Next slide.

6           And figures 10 and 11, that is showing us it's our view that that is a  
7 functional block diagram of, you know, showing electrical connections  
8 between the emitters on the one hand and the detectors on another hand. It's  
9 not showing spatial proportions or relationships between those. It's not -- it  
10 wasn't intended to show that the way that is described in the patent. Next  
11 slide.

12           Next I'll turn to the "adjacent to" arguments. This is in the  
13 independent claims. Next slide, slide 23. And so the claim language here in  
14 the '381 patent requires that there be" a bulk imaging object disposed  
15 adjacent to the bulk transmitting object." Next slide.

16           And we'll start with the *Imai* reference. Petitioner did not show that  
17 there are adjacent bulk optics. This is a figure that its biased caption says,  
18 this is figure 2C of *Imai* Exhibit 1009, biased caption that says "partially  
19 omitted." It is missing information about the system. It's just a very high  
20 level diagram of the system. It does not show all of the spatial relationships  
21 of all of the different components of the *Imai* system.

22           So if you go to the next slide, slide 26, you can see the different  
23 components that are missing, such as the rotary mirrors at 26. We don't  
24 know where that is in the context of this. We don't know where the  
25 synchronization system at 54 and 52. That's not shown either in figure 2C.

1 So we don't know where the spatial relationship is between the optics and  
2 figure 2C. This is just a very high level diagram.

3 JUDGE CHERRY: What does adjacent require?

4 MR. MORTON: That they be next to one another.

5 JUDGE CHERRY: So, but how next to each other?

6 MR. MORTON: The plain and ordinary meaning of that, that they are  
7 next to one another does.

8 JUDGE CHERRY: Doesn't that show --

9 MR. MORTON: (Inaudible) next to.

10 JUDGE CHERRY: Doesn't that show them next to each other? And  
11 do you dispute Mr. Hawkins' characterization that these three diagrams are  
12 kind of slices in different claims?

13 MR. MORTON: They are showing -- they're showing different  
14 aspects of the system that you see, yes, it does show the system from a  
15 different perspective. You see that from the coordinate system that's shown  
16 there. But there is a lot that's omitted in this system. And so we don't know  
17 exactly where everything is located. And so we're just assuming that these  
18 optics are next to each other when we haven't taken into account the other  
19 aspects of the physical system that are shown in figure 2A and 2B. So we  
20 don't know with any certainty whether those optics are next to one another  
21 or adjacent to one another.

22 JUDGE CHERRY: Well, we know that the light -- we know that  
23 these are the beams of light, right? The same beams of light traveling. This  
24 is showing how the system -- how the light is traveling. Right?

25 MR. MORTON: We know that it's showing a beam of light from the  
26 light array and that it's using the same mirror 24. But we --

1 JUDGE CHERRY: So you're saying that to be adjacent, there can be  
2 nothing between them?

3 MR. MORTON: That they need to be next to each other.

4 JUDGE CHERRY: They need to be how next to each other.

5 MR. MORTON: The plain meaning of that, that they are right -- that  
6 they are next to one another.

7 JUDGE CHERRY: So if there's a frame, is that still adjacent even  
8 though they're not touching? Do they have to be touching?

9 MR. MORTON: I don't believe they need to be touching, but they  
10 need to be next to one another. And our point here is that figure 2C, there  
11 isn't enough information in figure 2C and the accompanying discussion to  
12 know whether those optics are next to one another. This is just a high level  
13 diagram of this system, which is consistent with what Dr. Shanley said on  
14 slide 27, that he called this just a sketch and that this truncates a lot. A fair  
15 amount of the drawing is truncated from this in figure 2C. And he further  
16 testified that we don't know any of the details. This is all on slide 27 and the  
17 citations we have there to his deposition. So even Dr. Shanley, their expert,  
18 agrees there's a lot missing from this diagram in figure 2C.

19 Furthermore, Dr. Shanley questioned the translation of *Imai*. He  
20 thinks that the word "overlaps," there may have been some translational  
21 difficulties. I'm not sure why he said that when the Patent Owner -- or sorry,  
22 the Petitioner put in a translated copy of the *Imai* -- the original Japanese  
23 application at Exhibit 1027, paragraph 20, used the same word "overlap."  
24 So Dr. Shanley wasn't even -- yeah, he thinks -- he thought that this is  
25 unreliable. Next slide.

1           And then again on slide 29, we're seeing this backfilling of their  
2 arguments on reply, adding in this additional discussion of what's depicted in  
3 the XZ plane, arguing that the relative positions of the structures are actually  
4 accurately depicted. That was not something that was brought out in the  
5 petition by the Petitioner.

6           JUDGE CHERRY: And how is that backfilling? You -- I mean, the  
7 figure shows them adjacent next to each other. You're questioning the  
8 accuracy of that. And so then they're pointing to these other parts of the  
9 figure to say, yes, our interpretation of the bottom figure is correct. How is  
10 that not appropriate reply?

11          MR. MORTON: Well, it's our view, Your Honor, they should have  
12 been more -- they should have provided more explanation in the petition.  
13 They tried to jam a lot of grounds into this petition. And so they gave a lot  
14 of their arguments short shrift in the initial petition. And, you know, we  
15 think they should be held to what they argued in the petition.

16          Slide 30, please. Here showing what -- this is actually what was in  
17 the petition, did not show that analysis of the XZ plane. Just, you know, this  
18 is a very cursory discussion of element 1D by the Patent Owner.

19          Then slide 32, we'll move on to *Retterath* and the "adjacent to" issue  
20 here. Next slide, slide 33.

21          Petitioner's relying on *Retterath*'s figure 1 -- or 11B, which shows  
22 the emitter and detector arrays at opposite corners. However, slide 34, there  
23 is no discussion in the patent about how the optics are located with respect to  
24 this figure 11B embodiment. We talk about the 11A embodiment. You  
25 know, that one had a single optic. But the patent didn't describe anything  
26 about the 11B embodiment and where the optics would be. Next slide.

1           That's the 11A embodiment. And slide 36, the Petitioner's expert  
2 doesn't explain or analyze how *Retterath* discloses that the optics are  
3 adjacent to one another. He just says, oh, there's an object, the macro lens  
4 230. There's a macro lens 80. It's going to stick them on there. But he  
5 doesn't explain anything about, you know, whether they -- what you'd have  
6 to do to make them be adjacent to one another in that system.

7           And Exhibit 37, and they talked about the *Pacala* reference.  
8 Notably, in the reply they don't even talk about this *Pacala* combination  
9 anymore. They didn't address any of our arguments about that. We had a  
10 very cursory discussion of that in the petition and the declaration with the  
11 petition and that they did not do enough to show that those should be  
12 combined.

13           And one thing I want to note about the -- that *Pacala* reference, the  
14 Petitioner argued that or asserted that that patent was owned by Ouster.  
15 That's not true. Our understanding is that that patent was assigned that  
16 technology. That wasn't ours.

17           JUDGE CHERRY: But it's the same, but better (phonetic).

18           MR. MORTON: (Inaudible).

19           JUDGE CHERRY: It's the same thing, right?

20           MR. MORTON: In there (phonetic), yes. Yeah. I just want to  
21 correct the record on that.

22           JUDGE CHERRY: But the way I understood their argument was that  
23 they were arguing that having a lens for each was well known. Do you  
24 dispute that? That having a -- I mean, even *Retterath* seems to suggest that  
25 because they suggest, oh, there's an alternative where you can use a single  
26 lens. So that seems to imply that you could have multiple lenses, right?

1           MR. MORTON: Yes. I mean, there certainly were examples in the  
2 prior art of there being two lenses in these types of systems. But the point  
3 here is they didn't put that enough explanation about that in the petition.

4           All right. If there's no further questions on that, I'll turn it over to  
5 Mr. Lauppe.

6           MR. LAUPPE: Good morning, Your Honors, and may it please the  
7 court. So I'm going to continue with the claim construction issue related to  
8 the claim language that you see on the screen here. This is in claim 1 and  
9 there's similar language in claim 14.

10           So just to provide you the whole language here, because from, you  
11 know, Petitioner's presentation, they don't really want you to look at the  
12 whole language here. They focused only on the term "coincident with." But  
13 just to remind the Board, we're seeking to construe this whole phrase here,  
14 and I think that's important context, because I think that the whole phrase  
15 here really frames where we're coming from with this construction.

16           So here's where this claim language appears in independent claims 1  
17 and 14. So, as you can see, optical system comprising optical emitters and  
18 pixels. And then you see the claim language which says for claim 1, "each  
19 pixel in the plurality of pixels has a field of view coincident with an  
20 emission region of a corresponding optical emitter in the plurality of optical  
21 emitters." So the key thing here, in addition to, for example, the language  
22 "coincident with," which is all Petitioner focused on in its presentation  
23 today, some other very key language here. For example, what is coincident  
24 with here? You have a field of view of pixels and you have an emission  
25 region of an emitter. So you have a field of view and a region, which I think

1 underlines the fact that this language relates to correspondence, substantial  
2 correspondence of area between an emission region and a detection region.

3         So that's all we sought to do with our construction here is to clarify, I  
4 think, something that's pretty clear from the claim language itself, which is  
5 that each pixel -- the field of view of each pixel and the emission region of a  
6 corresponding, or paired in claim 14, optical emitter covers substantially the  
7 same area in the field. And like I say, I think this comes -- we can see this  
8 already in just the claim language itself. But if we look further into, for  
9 example, the intrinsic evidence, this has a ton of support in the '381  
10 specifications.

11         So, for example, we have this disclosure that says the system 100 in  
12 the '381 specification includes a set of illumination sources that project  
13 discrete illuminating beams at an operating wavelength into and  
14 substantially only into the fields of view defined by the apertures. So, again,  
15 we have this concept of emission regions and detection regions substantially  
16 matching.

17         Furthermore, if we look at this part of the '381 specification on slide  
18 44, it discloses an illumination pattern that substantially matches in size and  
19 geometry across a range of distances from a system, the fields of view of the  
20 apertures looking at substantial matching. And furthermore, the '381  
21 specification also focuses on or discloses the use of diffusers, which spread  
22 light rays out across the entire area of a pixel. So there's clearly a focus on  
23 making sure that all the area of the pixel is utilized and all the light sent out  
24 into the external field is detected. And it's not like this is coincidence. The  
25 '381 patent specification puts a lot of focus and indicates there are a lot of

1 advantages to having this kind of matching arrangement between emission  
2 and detection regions.

3           So, for example, it discusses that minimal power output by the  
4 system via the illumination sources is wasted by illuminating surfaces in the  
5 field for which the pixels are blind. Furthermore, it talks about the system  
6 can achieve a relatively high ratio of output signal, eliminating beam power,  
7 to input signal, and furthermore discusses the fact that the system exhibits a  
8 relatively high signal-to-noise ratio. So these are all advantages that appear  
9 to be central to the '381 patent specification and to the '381 patent's  
10 invention. And they're all linked to this matching of emission in detection  
11 regions.

12           So Dr. Janet, Patent Owner's expert, testified as to these advantages  
13 that the '381 patent discloses. '381 is concerned with minimizing waste --  
14 wasted energy while, at the same time, improving or maximizing signal-to-  
15 noise ratio.

16           And if we look into other disclosures in the intrinsic and extrinsic  
17 evidence for some of the underlying claim language here, for example, that  
18 "coincident with" phrase that Petitioner puts so much emphasis on in his  
19 presentation to the exclusion of the rest of the language in the claim term.  
20 For example, we see the use of this word "coincident" elsewhere in the  
21 specification where it's talking about area. It talks about an aperture layer  
22 140 coincident with focal plane. And we can see that in figure 1 here. The  
23 aperture array covers basically the entirety of the focal plane in the context  
24 of this bounded optical system. It's just covering the same area.

25           And we see that similarly in a dictionary definition that Patent  
26 Owner was provided in this case. This is Exhibit 2011 and this is on slide

1 49. Coincident means, "Occupying the same place or portion of space." It's  
2 in same place or portion of space. So Petitioner's interpretation of this  
3 language is a bit elusive.

4 In Patent Owner's view, Petitioner came out the gate in the petition  
5 suggesting that the only thing necessary for an emission -- or for an emitter  
6 and a detector to be coincident with each other is for them to have a common  
7 coincident axis. However, it seems like in reply Petitioner has changed its  
8 position. Suddenly, there appears to be some concept of minimum overlaps.  
9 There's some discussion of, oh, well, Patent Owner inaccurately states that  
10 the petition depends on the view that any overlap between admission and  
11 detection regions is sufficient. So that begs the question, well, what overlap  
12 is sufficient then? We asked Dr. Shanley this and he said he couldn't  
13 speculate.

14 So this is simply a view that has really no expert support and just  
15 seems to be -- suggests this kind of shifting sands approach that Petitioner's  
16 taken to this entire proceeding. But ultimately, I mean it's still a little bit up  
17 in the air. What is Petitioner's view as to the amount of overlap is necessary  
18 between emission and detection regions? It's a little unclear.

19 JUDGE CHERRY: How is your definition any more particular? I  
20 mean, it's still substantially. I looked *Imai* says that it's slightly larger.  
21 How's that not a substantial overlap? What does *Retterath* say? It says, it's  
22 slightly smaller -- one's slightly smaller, one's slightly larger. How is that  
23 not substantial overlap?

24 MR. LAUPPE: Well, I'll send you a (inaudible), Your Honor.

25 JUDGE CHERRY: You don't require perfect overlap, right?

1           MR. LAUPPE: Correct, Your Honor. So our construction is the  
2 emission and detection regions are substantially the same. But if you look at  
3 it through --

4           JUDGE CHERRY: And they've pointed to Figure 2, which you  
5 haven't talked about. Figure 2, the discussion of figure 2 in your patent  
6 seems to say that it can be slightly different, which is consistent with these  
7 two references.

8           MR. LAUPPE: Understood and sorry to interrupt you, Your Honor.  
9 So I would just like to point you to slide 62 because you mentioned *Imai*.  
10 The focus of *Imai* versus the '381 patent is strikingly different. So, again,  
11 the '381 patent is focused on ensuring that minimal power output by the  
12 system, by illumination sources, is wasted. On the other hand, *Imai*  
13 discusses that you set the irradiation range of an LD to be larger -- slightly  
14 larger than the corresponding light receiving ranges of the four PDs. And  
15 why, *Imai* says, it's because it improves light reception quantity, so that way  
16 the receivable range may be increased and detection accuracy and detection  
17 distance may be improved. So *Imai* is basically saying illuminate a lot, so  
18 that way you can detect a lot. But that's a very different kind of disclosure  
19 than something that we see in the '381 patent and I think that contextualizes  
20 and --

21           JUDGE CHERRY: Your claims are directed to a device, right? And  
22 it doesn't matter -- the law is clear that it doesn't matter what you intended or  
23 what the inventor intends to accomplish. Your claim is defined by this  
24 device. And what we look at is to see whether the same device -- or the  
25 same teachings of what your device is are taught in a prior art, not whether  
26 *Imai* intended the same -- the exact same thing that your inventor intended.

1 So, I mean, I don't understand, why is that relevant? Why is that relevant to  
2 the structure? If it's the same structure, then it doesn't matter what the intent  
3 was.

4 MR. LAUPPE: Understood, Your Honor. And here's how I would  
5 answer that. So there's been comparison. For example, Petitioner has raised  
6 the comparison between language and *Imai*, like slightly larger than in  
7 certain language in the '381 specification. But we would just point to, you  
8 know, disclosures like this, which suggest that slightly -- you know, if we're  
9 going to compare the specifications, this could also be part of how a person  
10 of ordinary skill would view these specifications. And for example, in *Imai*,  
11 would not necessarily view the language "slightly larger than" in the same  
12 sense as, for example, how it appears in, for, example the '381 patent  
13 specification because these systems have basically completely different kind  
14 of objectives. And whereas the '381 patent specification shows this is a  
15 dimension very focused on taking these emission and detection regions, in  
16 my view, kind of often in very different directions. So I think that should  
17 inform how we understand and kind of differentiate how these different  
18 patents use, for example, the word "slightly."

19 So turning back to I'd like to discuss now the *Retterath* grounds. So  
20 grounds 1A to 1G, Petitioner failed to show that there are substantially the  
21 same emission and detection regions in either the *Retterath* or *Weimer* prior  
22 references. So here is the discussion in the *Retterath* reference regarding  
23 emitters and detectors. The only discussion there is that the emitter and  
24 detector vectors are coincident. And this, again, is focused on vectors,  
25 which is, i.e., sort of like a direction of these emitter and detector light

1 beams. But there's no focus here or there's no discussion here of overlap in  
2 any respect of the area of an emission region and section region.

3 So, and again we see this kind of this makes sense within the context  
4 of the *Retterath* system. *Retterath* is not focused on similar, you know,  
5 minimal power output, efficiency of power output, for instance, like the '381  
6 patent is. Rather, *Retterath* is focused in an entirely different direction of  
7 reducing interference. And you see that in how *Retterath*, you know,  
8 constructs the system. So, for example, it really focuses on smaller emission  
9 regions because otherwise, it discusses that there's a possibility of crosstalk  
10 for detectors that are near the non-coincident axis for a different detector.  
11 And also, I mean, *Retterath* even goes into this timing system where you  
12 have these sparse pulses that pulse different emitters at different times,  
13 which is so focused on this issue of crosstalk between emitters and detectors.

14 *Weimer* doesn't remedy any of the deficiencies with the *Retterath*  
15 disclosures. As you can see, *Weimer* discusses using spot sizes, laser spot  
16 sizes that are slightly smaller than the receivers in the continuous field of  
17 view. And we can see that, for example, in figure 2A. Not only are these  
18 emission regions smaller, they're of a different shape. There's really no  
19 correspondence at all. I mean, the only matching is in that they -- you know,  
20 one has a subset of the other. But in our view, that's not the proper reading  
21 of the claim language here and what it requires.

22 Now, Petitioner focused on, you know, I think this is part and parcel  
23 of the approach here, they focused on disclosure in *Retterath* about how, you  
24 know, collimated light rays are emitted and received. But I'd just like to  
25 point out, and so I just want to make sure I'm getting the right evidence here,  
26 so this disclosure about collimated lights being emitted and received is

1 something that Petitioner never -- oh, sorry, this is Exhibit 1005, 1933 to 44.  
2 This is an excerpt that they -- the Petitioner used on slide 8 of their  
3 presentation. If you look back at, for example, petition pages 15 and 22  
4 here, these are not petition pages related to this claim limitation that we're  
5 discussing here, this each pixel coincident with claim language. Rather, this  
6 is talking about some other limitations entirely. So Petitioner's never used,  
7 to our understanding, this particular disclosure from *Retterath* for this  
8 purpose of arguing that there's kind of mashing between emission and  
9 detection regions in *Retterath*'s disclosures. And I mean, you can see why.  
10 This is a very vague disclosure that doesn't really connect to any of the  
11 embodiments that Petitioner is relying on.

12 So we would just argue that that disclosure should really be just  
13 disregarded and isn't relevant to the discussion related to this claim  
14 language.

15 So, turning now, we already discussed a bit about the *Imai* reference.  
16 Actually, I think we generally covered the issues here. So unless there are  
17 any further questions about this claim construction issue, I'm going to go  
18 ahead and move on.

19 JUDGE CHERRY: Yeah, I'd like to hear about -- I asked about figure  
20 2.

21 MR. LAUPPE: Gotcha. Sorry to not address that, Your Honor. So  
22 figure 2, this is certainly not something that we've ignored and, I mean,  
23 we've cited to it and we're -- you know, Petitioner suggested that we're  
24 running away from it or something. That's not so. Like, the fact is, figure 2  
25 shows that there can be some light rays, for example, not going into  
26 particular corresponding aperture. But in our view, this is accounted for by,

1 for example, the substantially language in our claim construction. You  
2 know, we're not saying that there is perfect matching between emission and  
3 detection regions. You know, ultimately our construction is that the  
4 emission and detection regions are substantially the same. However --

5 JUDGE CHERRY: So you're saying figure 2 is not unclaimed?

6 MR. LAUPPE: Correct, Your Honor. Figure 2, I think, fits perfectly  
7 within our construction. I don't recall anywhere that we said that figure 2  
8 was unclaimed. I know Petitioner seemed to suggest this in their  
9 presentation, but figure 2, I think, is perfectly consistent with our claim  
10 construction. And as you can see, I mean, there are a few stray light waves  
11 and there is this kind of aberration issue. There's this kind of field, a certain  
12 field, with some curvature to it. And so, you know, in our view, that doesn't  
13 contravene the fact that ultimately the '381 patent focuses on the fact that  
14 emissions and detection regions seem to be substantially the same.

15 JUDGE CHERRY: So you accept that it says it can be slightly larger.  
16 And so "slightly larger" would be within -- in the scope of "coincident  
17 with?"

18 MR. LAUPPE: So again, Your Honor, there -- yes, we do accept that  
19 there is that language, "slightly larger." Again, I mean, I think this is part of  
20 our sort of the fact that our claim construction reflects substantially the  
21 same. And again, I mean, Petitioner has tried to suggest that this slightly  
22 larger than or slightly smaller than, oh, that's parallel. That's similar to the  
23 language in the prior art. But again, like I would point to, there were all  
24 these disclosures in the prior art to suggest that when those references use  
25 terms like "slightly larger" or "slightly smaller than," that's in a very

1 different kind of application where there's no focus on ensuring that  
2 emission regions and detection regions match.

3         The one area where I would say -- where we did point out that  
4 Petitioner is pointing to language that appears to be unclaimed, there was  
5 this discussion of substantially coincident with in the '381 specification. It  
6 just sort of puts a pin on, you know, this "and" in a parenthetical. They're  
7 really parsing the language super closely. Only point there was simply, you  
8 know, if you're going to parse that language that closely, that's not actually  
9 the claim language. "Substantially coincident" is not what appears in the  
10 claims. I think this is -- and, you know, we cited this language. Again,  
11 we're not running away from it. I think this is all part of sort of what a  
12 person of ordinary skill would have understood and how they would have  
13 viewed this claim language. But still, we don't see this claim language as  
14 particularly needing to sort of parse the language, particularly to the fact that  
15 it's not actually the claim language itself. The separate claim language  
16 (inaudible) most of it.

17         So next I'm going to turn to the claims 6, 7, and 17, which are all  
18 dependent claims related to this opaque issue. So here's the claim language  
19 of 6, 7, and 17 on slide 65.

20         So claim 6 requires an aperture layer where you have a plurality of  
21 pixels comprising a plurality of apertures separated by a stop region. You  
22 have similar language in claim 17, an aperture layer where the plurality of  
23 aperture is separated by a stop region. And then you have claim 7, which  
24 indicates an aperture layer comprises a thin opaque structure.

25         So in our view, Petitioner for the *Retterath* grounds, grounds 1A  
26 through 1G, Petitioner has not been able to point to an opaque structure or a

1 stop region. And so here I would point you first to the discussion in Dr.  
2 Shanley's, Petitioner's expert's deposition, where Dr. Shanley would ask, you  
3 know, if a layer of the structure is opaque, can light still get through that  
4 layer? And Dr. Shanley says, if it's an opaque material, light -- it shouldn't.  
5 And if you choose your material right, it shouldn't. So light should not be  
6 able to pass through an opaque layer. So I think that provides context for the  
7 fact that the Petitioner has not been able to point to a structure that is opaque  
8 under this understanding that Dr. Shanley apparently agrees to because  
9 instead of pointing to an opaque layer, Petitioner has pointed to a layer that's  
10 apparently only substantially blocks light. It blocks -- it partially blocks  
11 light.

12 Petitioner suggests that we're using "substantially" inconsistently  
13 here. We are not. We are -- as I was using it in our - in the claim  
14 construction discussion previously, "substantially," you know, means not  
15 completely. And as we're interpreting it here, substantially blocked does not  
16 mean completely blocked. There's that word "substantially" that suggests  
17 there is some light that's getting through, which, based on Petitioner's own  
18 expert's testimony, if light is getting through this material, then that's not an  
19 opaque layer and that can't meet the claim language here.

20 So here's the structure that Petitioner is pointing to for this -- for  
21 these limitations for claims 6, 7, and 17. This is the alleged stop region or  
22 opaque structure. It's this gray waveguide material you see toward the top of  
23 the diagram. But since this is only substantially opaque, there is some light  
24 that's making it through this material. And as a result, this does not meet the  
25 requirement of the claims for a stop region or an opaque structure based, for  
26 instance, on Dr. Shanley's own testimony.

1           Now, there was some discussion in Petitioner's papers that the stop  
2 region may not be an opaque structure. Our view on this is that, first of all,  
3 just the claim language itself, this is a stop region. Clearly this is the region  
4 that stops light. This is not a region that's letting light through. But also, if  
5 you look at, for instance, this excerpt from the specification of the '301  
6 patent, the stop region is an opaque or reflecting region. Petitioner doesn't  
7 appear to be asserting that there's any -- that the waveguide material in  
8 *Retterath* is a reflective region. They're saying it's opaque structure, but as  
9 I've just been describing, it's not an opaque structure under, for example, Dr.  
10 Shanley's understanding.

11           This is also mirrored in Dr. Janet's testimony. So he testified that  
12 waveguide material 215 in *Retterath* is not opaque, but rather it lets light  
13 through. And so in his view this is neither a stop region nor an opaque  
14 structure. And as discussed previously, Dr. Shanley, Petitioner's expert,  
15 testified to the same thing.

16           So in an effort to get around this deficiency, apparently in *Retterath's*  
17 disclosures Petitioner includes in I think ground 1G, I forget exactly which  
18 ground it is, but in one of the ground 1 grounds includes a combination with  
19 the *Hipp* reference. In our view, a person of ordinary skill would not have  
20 been motivated to combine *Retterath* and *Hipp* like Petitioner asserts  
21 because this combination requires combining single photon avalanche  
22 photodiodes, or SPADs, from *Borowski* with this shadow mask structure  
23 from *Hipp*.

24           In our view a POSITA would not have been motivated to make that  
25 combination because *Hipp*, which is designed for APDs, a different type of  
26 detector, *Hipp* indicates that the shadow mask that it discloses creates an

1 interference signal, which -- in other words, noise in the system. And as  
2 Petitioner's expert conceded, SPADs are uniquely sensitive to noise. So  
3 Petitioner given the disclosures in *Hipp* about the noise that this shadow  
4 mask would create and the fact that it's to be used with APDs, a person of  
5 ordinary skill wouldn't simply have gone out into the world and decided a  
6 SPAD would be appropriate for the system. Rather, they would have  
7 viewed a SPAD as something you could not combine with this sort of  
8 system.

9         And Petitioner's only response to this argument is to raise an entirely  
10 new combination. They say, well, okay, if the *Hipp* shadow mask isn't  
11 enough, well, then let's incorporate other structures from *Hipp* that  
12 previously they had never provided, that they had never disclosed in their  
13 combination, into this *Retterath-Borowski-Hipp* combination. And so  
14 instead of this petition combination we see over on the left of slide 75 with  
15 *Retterath*, *Borowski*, and the shadow mask in *Hipp*, now Petitioner's  
16 combination has mutated into something that includes *Retterath*, SPADs  
17 from *Borowski*, a shadow mask from *Hipp*, light absorbing layer from *Hipp*,  
18 all sorts of other new structures that Petitioner seems to have discussed for  
19 the first time today in their presentation.

20         So, again, we just have here a continually morphing combination and  
21 one that just simply wasn't described or provided in the original petition. So  
22 in that respect, we think this combination fails because of the motivation  
23 issues that we raise and that these new arguments from Petitioner should be  
24 disregarded.

25         So now I'd like to turn to this person of ordinary skill in the art  
26 dispute. Here are the two definitions of a person of ordinary skill in the art

1 provided by the two parties here. So Petitioner proposed that a person of  
2 ordinary skill would have an undergraduate degree in mechanical or  
3 electrical engineering or physics, plus two to three years of experience in  
4 LiDAR design. Patent Owner's definition of a person of ordinary skill is  
5 over on the right, slide 81. Undergraduate degree in mechanical or electrical  
6 engineering is the same educational requirement, plus two to three years of  
7 work experience with electro-optical and electromechanical devices or  
8 systems with at a minimum at least one year of work experience with  
9 LiDAR designs.

10 So I put these definitions on screen because, from our view, well, we  
11 do advocate in our papers and believe that our definition, the Patent Owner's  
12 definition of the person of ordinary skill in the art is appropriate here.  
13 Regardless of which definition the Board chooses here it's met by Dr.  
14 Shanley and the evidence shows that.

15 So if we turn now to slide 82, these are just the disclosures from Dr.  
16 Shanley's resume -- oh, sorry, Dr. Janet. I continually did that in deposition  
17 as well. But this is just some paragraphs from Dr. Janet's resume where he  
18 discloses a B.S. in mechanical engineering in 1990 from the University of  
19 Virginia. That satisfies both parties' educational requirements. And then  
20 you have from 2011 to 2013, Dr. Shanley worked on systems involving, for  
21 example, a multi-sensor suite, including EO/IR Vision, and LiDAR. And  
22 also he interfaced with sensors, including LiDAR, in an unmanned ground  
23 vehicle.

24 So just from these resume disclosures alone you see that we have  
25 already two to three years of experience in LiDAR design that meets  
26 apparently Petitioner's definition. But that's not the only evidence we have

1 in the record here. We also have -- you know, basically Petitioner kind of  
2 tried to hide his head in the sand here. And even though it had elicited  
3 testimony from Dr. Shanley in a -- Dr. Janet in a parallel proceeding in the  
4 '405 patent IPR, where he discussed at length all of his experience in LiDAR  
5 design, still Petitioner tried to hide his head in the sand and not ask him  
6 about those same things in these proceedings and then tried to act like Dr.  
7 Janet does not have the requisite requirements for its POSITA definition.

8 But if you look at some excerpts from his deposition testimony, Dr.  
9 Janet's -- this is his testimony in the '405 patent proceeding, we can see that,  
10 you know -- Hesai's -- Petitioner itself asked Dr. Janet do you know if that  
11 LiDAR design or LiDAR building project, was that something you worked  
12 on over the span of weeks, months, years? Dr. Janet responded, I would say  
13 it spanned at least a year. I don't know if it crossed the two-year threshold at  
14 that point.

15 So there we have at least a year of work that, based on Petitioner's  
16 own question, involved LiDAR design or LiDAR building projects. So if  
17 we add that alone to, for example, the resume evidence that we were just  
18 looking at on slide 82, I think that clearly gets over the line.

19 But there's even further testimony Dr. Janet testified to the fact that  
20 over his 21 years or so, 22 years or so working as a Duke professor, he  
21 worked on various LiDAR systems. And then also when he works on the  
22 DARPA Grand and Urban Challenges, again, he works with a LiDAR  
23 variant on building this because it wasn't available commercially.

24 So in our view, we think this clearly meets the requirements of either  
25 party's person of ordinary skill in the art definitions. If you look actually at  
26 the testimony that Petitioner cited to where Dr. Shanley was discussing Dr.

1 Janet's background and criticizing Dr. Shanley -- sorry, Dr. Janet, you can  
2 see that Dr. Shanley was kind of importing all sorts of considerations other  
3 than his POSITA definition into his kind of criticisms. And we don't think  
4 that's appropriate. You know, really what's at issue is this, whether Dr. Janet  
5 met these -- either of these requirements. And so, you know, Dr. Shanley  
6 wants to bring in all of these other kinds of things, like, for example, he  
7 needs to only work on LiDAR systems for a year or, oh, he can't work on a  
8 team. We think that's inappropriate to kind of import into this inquiry. So  
9 from our view, it's pretty clear based on the evidence that Dr. Janet meets  
10 either party's POSITA definition for this case.

11 So next I'd briefly like to turn to some issues overlapping between  
12 the '381 patent and the '750 patent IPRs. So it covers a lot of the issues. So  
13 first we have this electromagnetic radiation output from claim construction,  
14 which mirrors a lot of the issues that we were talking about earlier on the  
15 claim construction issue for claims 1 and 13. So the language, again, you  
16 know, Petitioner didn't want to show you this language, but this language in  
17 claim 44 of the '750 patent is "electromagnetic radiation output from each  
18 emitter in the illumination pattern is coincident with a field of view of a  
19 corresponding pixel and the plurality of pixels." So here, again, we have this  
20 concept of an illumination pattern and a field of view. That's what's sort of  
21 coincident in this claim language. So, again, we have this concept of  
22 matching.

23 And the specification between the '750 and '381 patents are  
24 essentially the same. And so basically, all the evidence that we were  
25 marching through earlier applies here as well.

1           And here is our construction for this claim language. It's similar to  
2   what we proposed for the '381 patent. And similarly all the discussion we  
3   had of the various prior art references. Petitioner is --

4           JUDGE CHERRY: Are you saying --

5           MR. LAUPPE: Sorry, Your Honor.

6           JUDGE CHERRY: Are you contending there's a material difference  
7   between illumination pattern and what it says in the other patent?

8           MR. LAUPPE: No, Your Honor. My only point there is that  
9   illumination patterns similar to the discussion of, you know, emission  
10   region for the '381 patent claims both relate to an area. But in our view there  
11   are no substantially materially different issues related to these different  
12   constructions or claim language.

13          JUDGE CHERRY: So maybe that's why they didn't show the claim  
14   language. I mean, you kind of imputed that they were being nefarious there.  
15   It doesn't sound like it's really meaningful.

16          MR. LAUPPE: We're not asserting they're being nefarious. I think  
17   we're just asserting that the context is important here. And I think it's  
18   important for both the '381 and for the '750. So that's just why we're  
19   showing it to you. I think they chose to only focus on the "coincident with"  
20   language because, you know, taken away from context, there might  
21   apparently be less support for this construction. But just based on the claim  
22   language alone, if we look at it in full context, we think that that context was  
23   important here.

24          JUDGE CHERRY: Okay.

25          MR. LAUPPE: Next, the stop region issue. This is for the  
26   independent claim 44. This is very similar to the stop region limitations that

1 we were discussing earlier in claims 6 and 17. And again for the *Retterath-*  
2 based grounds, in our view, these grounds do not satisfy this stop region  
3 limitation similarly to what we discussed for claims 6 and 17 of the '381  
4 patent.

5 And then finally, the "adjacent to" issue. This "adjacent to" language  
6 of both transmitting optics exposed, adjacent to the bulk imaging optics, this  
7 is similar to the limitation that we were discussing earlier for the '381 patent  
8 claims. So there are similar issues with the prior art and satisfying this  
9 limitation.

10 And then finally, secondary considerations of non-obviousness. We  
11 didn't really get to those today, but also the POSITA dispute. These also are  
12 kind of overlapping between these -- between the '381 and the '750 patent  
13 IPRs.

14 So next, I'd like to turn to a couple unique issues for the '750 patent  
15 IPR. I don't recall, but I don't believe this came out much in Petitioner's  
16 presentation, but this relates to the "threshold distance" limitation of claim  
17 44. And here is the requirements in claim 44. So each pixel has a field of  
18 view that is non-overlapping beyond a threshold distance in a field external  
19 to the optical imaging system, the fields of view of all other pixels and the  
20 plurality of pixels. This threshold distance is something that Petitioner kind  
21 of waved his hand over in the petition and, in our view, throughout the  
22 development of facts here, Petitioner nor its expert has ever been able to  
23 really articulate what the threshold distance is in any of the prior art its  
24 asserting. So in our view, this threshold distance limitation has not been met  
25 by any of the grounds that Petitioner is asserting. So --

1 JUDGE JURGOVAN: Counsel, backing up for a second, can you  
2 explain to me what is the threshold distance?

3 MR. LAUPPE: Well, so the threshold distance is -- it's a distance  
4 beyond which the field of view of the various pixels in the imaging system  
5 are not overlapping. I mean I think --

6 JUDGE JURGOVAN: Can we assume from that that in the nearer  
7 distance before the threshold distance they are overlapping?

8 MR. LAUPPE: I don't think that's exactly -- that's not spelled out. I  
9 think that's one possibility. I guess from our perspective, you know, this is  
10 Petitioner's burden and it was Petitioner's burden to really explain how this is  
11 -- sorry, go ahead, Your Honor.

12 JUDGE JURGOVAN: I mean, you know, as a prerequisite to  
13 Petitioner being able to address it, they have to understand what it is. And  
14 so can you show me where this threshold distance is in, for example, figure  
15 2 of the patent?

16 MR. LAUPPE: Well, do I address the issue? I don't know if I do my  
17 presentation. I mean, that's not in the record. I don't think there's anybody  
18 who's -- like, there's not, for example, expert testimony on that issue. Dr.  
19 Janet, Patent Owner's expert, did testify that unlike *Retterath's* '750 patent  
20 describes how a person of ordinary skill would arrive at a number, Petitioner  
21 did not follow up on this. So I don't -- like, there's not really much factual  
22 development on this issue.

23 Our point simply is that Petitioner has not nor its expert have been  
24 able to point to -- and, in fact, Petitioner's expert has said that he cannot be  
25 certain and he cannot quantify threshold distance in any of the prior art that  
26 Petitioner's asserting.

1 JUDGE JURGOVAN: I understand your argument, but, I mean, as I  
2 read the specification, it's pretty much mirroring exactly what's said in the  
3 claim without further, you know, further explanation or elaboration on what  
4 is this threshold distance. And so that's why I'm asking the question, what is  
5 it?

6 MR. LAUPPE: Yeah, understood, Your Honor. I would just point  
7 you to the claim language itself, and I think the claim language is fairly clear  
8 on that point. And in terms of further factual developments, Petitioner had  
9 the opportunity to kind of get more detail on this, but really didn't seem to  
10 embrace that opportunity. So, you know, I don't think there's all that much  
11 factual development on really what this threshold distance is. However,  
12 what is clear is that Petitioner hasn't been able to point to a threshold  
13 distance in any of the prior arts. And so, you know, we think that's  
14 essentially dispositive for these grounds.

15 JUDGE JURGOVAN: Thank you.

16 JUDGE CHERRY: The way I understand it is he's saying he just  
17 doesn't -- can't give you an actual number for it. I mean, can he still identify  
18 that something is within the threshold distance even if I -- even if we can't  
19 calculate the number?

20 MR. LAUPPE: Well, Your Honor, if he could do that, he didn't. I  
21 mean, it wasn't like any of our questions were about a number. You know,  
22 we were just asking, what is the threshold distance *Retterath* discloses?  
23 And, you know, he said he couldn't put an absolute number on it, but it's not  
24 like he said, but I could derive it. You know, he just simply said he couldn't  
25 quantify it. It's not a quantifiable number. I mean, that's how he chose to  
26 respond.

1           So I guess there's a possibility that even if you couldn't put a number  
2 on it for a piece of art, then you could maybe, like, point to it, but he wasn't  
3 able even to do that.

4           JUDGE JURGOVAN: Well, when I look at figure 2, though, I mean,  
5 I don't see anywhere where they're overlapping. Can you show me where  
6 I'm wrong about that?

7           MR. LAUPPE: I think I agree, Your Honor, and I don't think it  
8 necessarily requires that the fields of view ever had to be overlapping. You  
9 know, potentially, I guess the threshold distance beyond which the field of  
10 view is not overlapping could, I guess, be zero, not that the Petitioner's ever  
11 articulated that or its experts.

12          JUDGE JURGOVAN: But is that even a limitation? I mean, do all  
13 systems have this just inherently?

14          MR. LAUPPE: I don't think there's been any factual development on  
15 that. I couldn't speculate. But, you know, if so, I don't think, again,  
16 Petitioner has shown that. And ultimately, when it came down to it,  
17 Petitioner basically hand-waved over this limitation. You know, if it wanted  
18 to assert in its petition that, well, this is something that's inherently present  
19 in all systems of this sort, then it could have, but it didn't. Instead, it tried to  
20 act like this is something that -- it just seems like it sort of flew over this  
21 limitation. So in our view, that's not sufficient.

22          JUDGE JURGOVAN: I understand your view. Thank you.

23          MR. LAUPPE: Yes, Your Honor. I think I'm basically out of time.  
24 Just real quickly, I'd like to focus briefly on the *Weimer* reference.

25                So, again, you know, Petitioner today conceded to this typo in sort of  
26 element 44E. This is a typo that was present in both the petition and the

1 Shanley declaration. And in fact, we asked Dr. Shanley in his deposition  
2 whether he had any corrections to his declaration. So we asked him -- this is  
3 at page 10, line 8, to page 11, line 19 in Exhibit 2010. We asked Dr.  
4 Shanley if there were any corrections to his declaration. He didn't identify  
5 this one. So from our perspective, I mean, there's not really much we could  
6 do. And I guess Petitioner's arguing that we needed to look elsewhere in  
7 their petition, and we basically needed to make their arguments for them.  
8 There's not really much we could do given that we didn't have anything in  
9 either the petition or the Shanley declarations that really matched reality.  
10 You know, this bulk transmit optics 31 is just simply not something that's in  
11 *Weimer*. So, in our view, you know, the fact that this is a typo, I guess that's  
12 one thing, but the fact that this is a typo that appears in both the petition and  
13 the declaration (inaudible).

14 JUDGE CHERRY: To the extent they've corrected the typo that  
15 they've alleged you -- do have any dispute about their -- what they corrected  
16 it to?

17 MR. LAUPPE: Yes, Your Honor. So we would focus on the fact that  
18 -- so what they've corrected that typo to is, you know, pointing to these  
19 elements 318 and 322 in figure 3A. This is a figure that -- and basically, you  
20 know, similar to the *Imai* grounds, they're simply pointing to this figure and  
21 saying, see, a person of ordinary skill would have seen the, you know,  
22 spatial proximity in this figure and would have concluded from that that  
23 these elements 318 and 322 are adjacent to each other. But we asked Dr.  
24 Shanley, Petitioner's expert, about this figure. He said he has no idea if this  
25 figure is to scale. I mean, we think that's essentially -- like, that's essentially  
26 -- since Petitioner's relying on this figure for its spatial relationships, and

1 since Petitioner's expert can't say whether those spatial relationships are  
2 actually to scale (inaudible).

3 JUDGE CHERRY: I think that -- I mean, that's a different -- I mean, I  
4 think that the law is clear that we can't measure, we can't pull out the ruler  
5 and start measuring the figures. But we can take it -- I mean, I think that  
6 that's -- the Director had a recent decision, the *Mahle Behr* decision, that  
7 talks about this, that we can look at the relative relationships between things  
8 and figures. I mean, I guess the fact that he is -- I mean, he's correctly  
9 saying it's probably -- I mean, I think it's presumptively not to scale under  
10 the law. So I mean, I don't understand why that's important. If we're not  
11 worried about the exact measurements, if we're just looking at the relative  
12 relationships, isn't this sufficient?

13 MR. LAUPPE: Well, I think given the claim limitation here, that this  
14 requires both imaging optics adjacent to -- I'm blanking (inaudible) --

15 JUDGE CHERRY: So you're now saying that (inaudible), I mean,  
16 adjacent to some exact amount?

17 MR. LAUPPE: No. And it is -- I mean, worth noting here that  
18 Petitioner's expert himself, Dr. Shanley, asserted in deposition that "adjacent  
19 to" required a transmitting object to be immediately next to a receiving  
20 object. So I think that, again, like it just kind of goes to sort of credibility  
21 and kind of shifting positions here and things. But you know, I think that  
22 informs how we need to understand this. Like the fact that Dr. Shanley is  
23 saying, well, I don't know the scale of this diagram, and yet I'm asserting  
24 that these two lenses would be immediately next to each other, in our view,  
25 we don't really see how to thread that needle. And I think that brings a lot of  
26 doubt.

1 JUDGE CHERRY: He's an expert in this field. I mean, can't he look  
2 at these and say, yeah, in my expertise this is -- these two lens would be next  
3 to each other?

4 MR. LAUPPE: But, again, I mean, when we asked him about this  
5 figure, he said he had no idea if the relationships were to scale. So in our  
6 view, that at least makes sense.

7 JUDGE CHERRY: Again, you're conflating that relative thing I was  
8 talking about versus the exact thing that I was talking about. So I guess  
9 that's why I'm -- why is it important that it be to scale?

10 MR. LAUPPE: Well, in our view, it's because Petitioner is relying on  
11 apparent spatial relationships in this diagram for why this adjacent to  
12 limitation is met.

13 JUDGE CHERRY: Okay. Thanks.

14 MR. LAUPPE: That's everything. I think we're going to reserve the  
15 rest of our time for rebuttal. Thank you, Your Honors.

16 JUDGE CHERRY: Okay. We asked a lot of questions, so you still  
17 have your 30 minutes. Mr. Hawkins, you have your 20 minutes. Go ahead.

18 MR. HAWKINS: Thank you, Your Honor. I'll start with the -- I'll try  
19 to take these in reverse order. This just came up, since the threshold  
20 distance issue is fresh in our mind. And Mr. Lauppe is correct that we didn't  
21 have time to get to that in the first part.

22 So as an initial matter, the threshold distance issue, Judge Jurgovan  
23 was on the right track in that, like in figure 2, they're not overlapping for all  
24 distances or, as Mr. Lauppe said, in theory the threshold difference could be  
25 zero. That is, in fact, exactly what we showed in our petition several times.  
26 We actually reiterated it in the Petitioner's reply with a graphic.

1 But there was another thing where he kept saying, well, Dr. Shanley  
2 never articulated how it would be done. And I want to raise this because as  
3 part of the surreply, so the second deposition, when we were no longer  
4 allowed to file any papers, Mr. Lauppe asked Dr. Shanley this and he  
5 answered it. So I want to share that briefly. It's Exhibit 2020, and it's pages  
6 57 and 58. And we cite to 57 in our slides, by the way. But if you look on  
7 the left side of my screen here, this is the bolded text of Dr. Shanley and he's  
8 talking about, yeah, in my declaration, in paragraph 48, I say it's apparent  
9 that *Retterath* has at least as much detail as the '750.

10 And you go down and in the very top of paragraph 58, he's saying,  
11 "So I think both patents allude to, but don't quantify a number. And if we  
12 have the optical codes and did the precise design, we would quantify that  
13 number." In other words, what Dr. Shanley is saying is, to be quite honest,  
14 exactly what the '381 patent says because the 381 patent says -- only one  
15 single instance does the word "threshold distance" appear ever. It's in  
16 column 2, line 57, and it parrots the claim language. So there is no like, and  
17 by the way, here's the math equation how to do it. But Dr. Shanley is  
18 correct.

19 Well, I need to know what lenses you're using. What's the thickness  
20 of your lens? How far apart are your pixels? If you tell me that and I know  
21 what your aperture looks like, I can mathematically calculate that distance.

22 So, yeah, this was discussed by both experts. I don't think there's  
23 actually a lot of dispute. Yeah, both experts can look at these drawings.  
24 And if you physically build the system, I could do the calculation for you.  
25 It's no leap of inventiveness. And I think that is an issue that we can put to  
26 bed here.

1 I will also note in our slides, we try to go down to the threshold  
2 distance issue. And in slide 65 of Petitioner's demonstratives, you'll see we  
3 get the example of *Retterath*. Look, *Retterath* is not overlapping for all  
4 threshold distances. And you know, this image in *Retterath* is what we cited  
5 to in petition 2. And that's the same as what's shown in figure 2 of the  
6 challenged patent.

7 And then again in *Imai*, this is our slide 66. You'll see that *Imai* also  
8 has non-overlapping and they actually have these light lines that are going  
9 out. They're parallel. They're not overlapping in any scale, whether your  
10 threshold distance is zero or one millimeter or one meter. They would  
11 depend on which lens you make and in this case what mirrors you use. In  
12 theory, you could have some convexity or bending on your mirrors and then  
13 they would for a little bit, but you just do the math equation like any other  
14 ordinary engineer would do. So that's that issue.

15 I want to then work back in time. They went to the stop region issue.  
16 And you'll notice that in the text of the transcript, if you go back and listen  
17 to this, especially when they were talking about slide 68 on their slides, they  
18 constantly rely upon Dr. Shanley's understanding of the claim. Well, Dr.  
19 Shanley understands that it's this and, therefore, doesn't need it. And that's  
20 actually the same flaw they had in their POPR. You'll recall they kept  
21 saying, oh, there's this claim construction issue that somebody else thinks is  
22 right and so you have to then deny IPR based upon something that we're not  
23 even going to say we agree with. Right? And so that's the same flaw there.  
24 If you notice in their papers, they'll always say based upon Dr. Shanley's  
25 understanding, not saying, and that's what we think it is. And so I want to  
26 start from there.

1 But then if you go to our slide 55, scroll up here for you, they  
2 mentioned, by the way, there's not -- they said something about there's not  
3 evidence on this or it's Dr. Shanley's understanding that he's somehow  
4 agreeing with Dr. Janet, and it's just not true. So we're showing you on the  
5 right side of slide 55, this is paragraph 180, this is Dr. Shanley talking about  
6 *Retterath*. And he's saying that waveguide material is designed to block  
7 stray light. That's his testimony.

8 And if you go to Exhibit 1040, I think I can actually call that up on  
9 my screen here. Yeah, here's 1040 in this paragraph, 45 to 47. Let me zoom  
10 out a little so you can kind of see the whole thing. So, yeah, page 40 -- or  
11 paragraph 46, this whole paragraph is him explaining that, no, *Retterath* is  
12 teaching this. And, you know, the very end of paragraph 46, *Retterath*  
13 indicates that all these wavelengths are blocked without limitation or  
14 exclusion of the wavelengths. This straightforward description, again, that  
15 substantial blocking thing, confirms *Retterath*'s preference for the  
16 waveguide material to absorb and or block as much light of the spectrum as  
17 possible. Paragraph 47. I don't know how Dr. Shanley could actually be  
18 any more clear than this. I don't know why they think he's agreeing with Dr.  
19 Janet.

20 To be clear, *Retterath* never indicates any meaningful amount of  
21 light can pass through that waveguide material. Substantial blocking clearly  
22 indicates what is disclosed by that claimed opaque structure. So this is the  
23 testimony, this is what Dr. Shanley said. He wasn't agreeing with them at  
24 all.

25 And finally they bring up -- they have that graphic with the Hipp.  
26 There's this new articulated reasoning and I touched upon this. I'll bring it

1 up one more time. Again, our petition said that that waveguide material  
2 that's absorbing all those lights and those photons, that is part of our  
3 construction. In addition to the waveguide, we're putting the opaque layer  
4 that *Hipp* suggests in its shadow mask on that. So in that context you don't  
5 have this problem that *Hipp* is worried about. Right?

6 And so, in other words, the waveguide material 215 in *Retterath*  
7 already provides this, what they call the *Hipp* light-absorbing layer. That's  
8 in their slide 75 and their colored graphic. We aren't alleging we need that.  
9 We're saying that our original combination already had that. But if you go  
10 down the road of, okay, now I have to bodily incorporate *Hipp*'s mirror-  
11 coated layer and the problem that it says that might induce, if we go down  
12 that road and we are limiting ourselves only to that myopic view of the prior  
13 art, then surely the skilled artisan can at least read the next sentence on *Hipp*.  
14 Literally the next sentence is, by the way, to overcome that problem, you do  
15 this. And so that is not worthy of a patent monopoly. That's obvious. It  
16 literally says it in one sentence later. So I think that addresses a lot of their  
17 positions on the stop region.

18 Working back in time, I'll go to the claim construction issue, the  
19 "coincident with" phrase. Just to be clear, so everyone knows, we didn't  
20 hide any claim language. We actually presented the entirety of the claim on  
21 our slide 4. So we're not trying to hide an eight ball. We're just -- in fact,  
22 they presented a dictionary definition about coincidence, so that's why we're  
23 referring to it as that. I'll note a few points here.

24 First, Patent Owner's slide 46 -- and let's see if I can -- here we go.  
25 Patent Owner's slide 46 is actually quite interesting. I'm sorry, slide 47 they  
26 cite to this. We actually think it helps us. If you look at the description of --

1 in the challenged patents they do mention that there is this coincident focal  
2 plane. There's actually a different part of the specifications that uses an e.g.  
3 Apologize, I'm going to quickly try to find it here. Let's see. Oh, there it is.  
4 It's column 4 of the '381 patent, lines 15 to 17, "Aperture layer 140 includes  
5 a relatively thin opaque structure coinciding with, e.g., arranged along the  
6 focal plane." It doesn't say substantially the same size as the focal plane, and  
7 it shouldn't.

8 If you look at their slide, that focal plane is a plane. It's basically  
9 infinite in its length and width directions. Right? They illustrate the focal  
10 plane, a lowercase "f" at the bottom of their slide, extending in this image  
11 alone at least twice the size of that aperture layer 140. And our point is even  
12 column 4, lines 15 to 17, of the '381 patent and there's slide 47 is depicting  
13 that there isn't this substantially the same size mandate. Rather, that can be,  
14 as described in column 6 of the '381 patent, that can be an option. It's a  
15 species of being coincident with.

16 And I'll return to our slides where we highlight this. We did tie to  
17 extrinsic evidence like they did. They mentioned a dictionary definition and  
18 we said, well, sure, and let me show you how ordinary engineers at the time  
19 in this field were using the word "coincident." The patents we cite to here  
20 are neither Ouster's nor Hesai's. This is just a random third party using the  
21 phrase and drawing a picture of what coincident means.

22 And if you look at this picture, pixel 1, the solid circle does share the  
23 same area with the detector field of view. It does fit into their dictionary  
24 definition. But it does not mandate that both circles be identically the same  
25 size. In fact, one can apparently be twice the size of the other. And so this  
26 is where we think they keep getting lost in this position. And hopefully,

1 when you read the Patent Owner's response and especially the surreply, you  
2 can understand our confusion.

3 If I go up to here I'm on our slide 51, if you look in their surreply, the  
4 lower right corner, but none of the specification excerpts Patent Owner  
5 points to relate to a preferred embodiment. We pointed to the excerpts about  
6 figure 2. They were taking the position of like, that's not preferred, that's  
7 unclaimed. And here today we learn actually it is. And if it is, then they can  
8 be different. Apparently, it can be slightly larger. But *Imai*'s slightly larger  
9 doesn't count and they won't tell you why. And that's the key here. They're  
10 drawing a line. They're basically taking a giant net and shoving it through a  
11 tiny little hole in the wall to get it all the way through. And once they're  
12 through that hole of the IPR, they want to open that net up and expand it and  
13 ensnare the public. That's what's happening here. And I just don't think --

14 JUDGE CHERRY: How do you respond to their argument that  
15 because *Imai* and their patent have different purposes, that, therefore, it  
16 slightly means something different between the two patents?

17 MR. HAWKINS: Sure. There's two positions here. One was already  
18 articulated, I believe it was by you, Judge Cherry, which is, A, that's not the  
19 law. Right? You don't read the intended purpose into a claim construction.  
20 B, and I think we did raise this in our Petitioner's reply, if you look on the  
21 left side of slide 15, the lower left side, this is the top of column 6 -- by the  
22 way, this is all -- this column 6 part is all one paragraph. And they in their  
23 surreply cut it off and cite only to the bottom. So their slide will be like, oh,  
24 only look at column 6, line 34 now. Don't look at the first half of that one --  
25 that paragraph. Look at this fragment and blinders for the other stuff.

1 But this is written description support in column 6, this image in the  
2 box. This is written description support for them to file a motion to amend  
3 in this IPR. We are coincident with and substantially the same size or and  
4 substantially the same area. They could do that and we couldn't say there's a  
5 problem. Oh, there's one fault (phonetic). No, we couldn't. This is support.

6 And if they want to claim the narrower species of coincidence and  
7 make them be identical in size or substantially match, then say it in the  
8 claim. But, you know, I think -- I forgot the name of the old Federal Circuit  
9 case. The name of the game is the claim, right? And if it's not in the claim,  
10 then it's not in our construction.

11 And I will raise one other thing. They talk about how we're raising  
12 this idea of, oh, you know, selling the (inaudible), there's this minimum  
13 overlap. They take our position of citing to *Retterath*, not all grounds, by the  
14 way, *Retterath* alone and saying, ah-ha, you're demanding it, it must be a  
15 coincident axis. But that's not what we did. Right? The petition -- I'll try to  
16 get the text of *Retterath* up. Yeah, so the top right of slide 7, we cited to the  
17 full sentence, they are coincident, full stop, period.

18 Additionally, a further wonderful species of this is that they're  
19 actually aligned to and form a non-coincidence axis. But we weren't saying  
20 like on coincident axis alone, all of a sudden instantly, that means satisfied.  
21 We were pointing to that they're coincident. And it's not just this directional  
22 vector. *Retterath* itself in the very next part of -- on slide 7, the beam of  
23 light 110 is expressed as a vector. So if those vectors are coincident, the  
24 beams are coincident. That's what happened.

25 And finally, our slide 8, they complain about our citation at column  
26 19 admitted and received as collimated. They say, oh, well, if you look at

1 the petition at page 15, that's not about this. Well, admittedly, in our  
2 defense, we didn't know they were going to jam in a narrow claim  
3 construction of coincident with. We probably would have added the  
4 citation. But it was in a section that's literally titled, "The Predictable  
5 *Retterath-Borowski* Combination." I don't know how much more tailored  
6 we can get to when you're going to start looking at this consideration, you  
7 should look at column 19, too.

8 And by the way, we do cite to it a second time. We cite to it twice.  
9 Petition, page 22, we also mentioned that. That's, by the way, on the same  
10 page as the image on the left side of slide 8, the collimated beam image, the  
11 spot 94. Page 22 of our petition shows that image and it cites the column 19.

12 So we're not changing positions. We think that there is, you know,  
13 there's a degree of overlap. It appears to be sufficient enough that the  
14 detector can pick it up. Right? And then it also appears to be that there's not  
15 overlapping fields of view, that, in fact, the fields of view are isolated. But  
16 this exact perfect matching, we think of it as nothing more than, you know,  
17 kind of an absurd construction that they're saying if you're slightly less than  
18 or slightly more than, you're not substantially the same size, even though our  
19 figure is showing slightly more than. And we're dumbfounded still to this  
20 day, why the prior art doesn't meet it even though figure 2 would. I don't  
21 think you're going to get an answer to that today, Board -- Your Honors.

22 What I will say is that to the extent they're trying to argue that in  
23 figure 2 some of the stray light rays are missing it because of the curved  
24 surface, then if you think about it, their construction isn't dependent on the  
25 system. Because, again, figure 1, which they do rely upon, and figure 2  
26 show the same system 100, chain aperture layer 140, the same emitter 111,

1 the same pixels 170. It's the same system. Right? And what they're trying  
2 to say is that you can build a system and if I aim it at a perfectly flat surface,  
3 it's going to infringe our claim. And if the end user aims it at a curved  
4 aberration surface, it suddenly is not infringing of our claim. That can't be a  
5 construction adopted by the Patent Office.

6 Let's turn back in order to the "adjacent to" issue. Realistically, the  
7 only part I want to comment on and that relates to their idea that *Imai* has  
8 this -- is omitting some issues. In our view, it's not. So, again, in slide 39  
9 we have cross-sectional views. I explained that when you stack figure 2A  
10 on top of 2B and then you do that slice, you have your cross-sectional view.  
11 So I agree. I don't think there's actually any dispute among the parties that  
12 that rotating mirror 26 is not in that cross-section. It doesn't mean it doesn't  
13 exist. But it is accurate in *Imai* that it's omitted from that cross-section  
14 because it would actually be coming out of the plane, out of the page on this  
15 slide. But there's not a lot of dispute (inaudible) 39 of *Imai* that it's  
16 overlapped in the Z-axis direction and we know that, it shows it in figure 2C  
17 and they're shown right next to each other. So to us, what is omitted is clear,  
18 but it doesn't actually need to be shown in that plane of figure 2C.

19 Finally, wrapping all the way back up to the beginning of there is the  
20 proportional two elements. Two quick comments. First, they say that  
21 during this oral hearing is the first time we've cited to *Retterath's* figure 20.  
22 That's not true. As a matter of fact, their own slide, slide 15, shows exactly  
23 where we cited it to. This is part of their presentation, slide 15. You can see  
24 that in our Petitioner's reply we explained, look at paragraph 44 of Dr.  
25 Shanley. He's trying to tell you, you know, listen, if you're going on this  
26 narrow road, if it has to be the scaling factor, then even in the

1 proportionality, look at figures 11B and 20 that they're showing aligned  
2 rows. So this isn't some new thing we made up at the oral hearing. That's  
3 my point.

4       And I think it's worth noting, by the way, in Exhibit 1040, paragraph  
5 44 is very exhaustive and telling on this. He's laying out that even if I go  
6 down this road of applying this narrow construction, this is Exhibit 1040,  
7 paragraph 44 I'm showing on screen right now, then Retterath has this. You  
8 know, *Retterath* teaching that 16-by-16 array, it's teaching the 40-by-96  
9 array. I know that there can be these rectilinear grids that they talk about.  
10 Look at figure 20 -- you know, see also figure 20. So this is properly  
11 responsive to their argument of trying to jam in a scaling factor construction.

12       And the *Apple v. Andrea Electronics* and the *Axonics v. Medtronic*  
13 says that this is proper consideration. It's something that should be  
14 considered. We're looking at the same exact reference. We're not bringing a  
15 new one in and saying even if you have to mandate figure 3 means  
16 rectilinear grids or scaling factor grids, right, why can't we look at this? It's  
17 simply the 1-to-9 ratio that *Retterath* contemplates that we mentioned in our  
18 position. It says it can be 1-to-1 to 1-to-25. If you pick 1-to-9, there's figure  
19 20.

20       So, finally, the last thing I want to mention about this, the irony of it  
21 all in this "proportional to" section and all their stuff about new arguments,  
22 they pointed to *Imai*'s figure 11. And if you look at their slide 21, this is  
23 quite interesting. The title of this slide, "Petitioner relies on figure 11, but  
24 it's a functional block diagram only." Now, I encourage you to go look at  
25 their POR, pages 60 to 69, which they're citing here, or any of those pairs.  
26 What you are not going to see is an argument that figure 11 is merely a

1 functional block diagram. What you are going to see is avert your eyes, you  
2 can't look at figure 11, it's improperly new, which of course isn't true. But  
3 you're not going to see, ah, functional block diagram. That's a new argument  
4 today. So the irony of all this is that they're the ones raising the new  
5 argument.

6 I will also note that figure 11 of *Imai* is described as a schematic.  
7 Right? And I think that's accurate. Right? And figure 2 is a schematic. But  
8 if you look at the '381 patent, I'll just give you the cite, at column 1, it's the  
9 description of the drawings. Look at the description of figure 1 or figure 2,  
10 both of which we talked about a lot today. Column 1, lines 35 to 37 what  
11 does the Patent Owner call figure 1 and figure 2? Schematic.

12 So, suddenly, schematics in the prior art, we have no idea what they  
13 mean. But if you look at our figure 1, you can interpret the claim. You  
14 know everything. And that's -- people in this optics field, in the LiDAR  
15 systems, they did work in the world of schematics, and they did know when  
16 something is shown in a way that they are next to one another. And so I  
17 think it's perfectly fair for Dr. Shanley to rely upon schematics, as he does  
18 and mentions in these paragraphs, the same way that we can look at the  
19 schematics of the '381 patent and rely upon what it's teaching.

20 So with that being said, I'll cede the rest of my time. I do appreciate  
21 the Board's time and I'm thankful for your questions today. Is there anything  
22 else or any questions you have for me?

23 JUDGE JURGOVAN: No.

24 JUDGE CHERRY: No, none from me. Thank you very much, Mr.  
25 Hawkins. Mr. Lauppe, and Mr. Morton?

1 MR. MORTON: Yes, yes, thank you. Can you start with our slide  
2 21, please? With respect to slide 21, which was -- we'll do the same as  
3 Petitioner did here and work from where he ended and go backwards. With  
4 respect to slide 21 and this discussion of a functional block diagram, we're  
5 just explaining what this is. What they're pointing to is describing electrical  
6 connections between these different emitters and detectors. It is not  
7 describing spatial relationships.

8 And then with respect to Exhibit 20, my point was -- or sorry, with  
9 respect to *Retterath*, figure 20, my point was that was not something that  
10 was raised in the petition. I do recognize that it did come up in the reply.  
11 But, again, as I noted at the beginning of this oral hearing, the other side,  
12 they jammed a lot of stuff into this petition and gave a short shrift to a lot of  
13 their arguments, and then backfilled a lot of that on the reply.

14 And then on the "adjacent to," can you turn to the *Imai* central  
15 reference, please? Yeah. So this figure here, figure 2C, again, we didn't  
16 hear him dispute anything about what Dr. Shanley had to say about figure  
17 2C and what was missing and that it was basically just a sketch. So, you  
18 know, this does not have enough detail to show that the lenses are adjacent  
19 (inaudible).

20 And I'll turn it over to Mr. Lauppe for the remainder.

21 MR. LAUPPE: I only have a couple quick points. So, first, I would  
22 like to turn to the discussion of the stop region issue. So on this issue,  
23 Petitioner suggested that we're relying on Dr. Shanley's understanding of the  
24 term "stop region." That's not correct. We have testimony, you're seeing it  
25 on the screen on slide 70, from our expert, Dr. Janet, where he testifies that,  
26 you know, for example, *Retterath*'s waveguide material is not opaque and,

1 therefore, is not a stop region. So we're not, you know, we're not relying on  
2 any particular understanding of Dr. Shanley.

3         However, we still do point to Dr. Shanley's testimony where he  
4 indicated that an opaque material shouldn't let light through. And therefore,  
5 in our view, that supports the fact that *Retterath*, in disclosing a substantially  
6 opaque structure, is not -- does not satisfy the claim language for these stop  
7 regions or opaque structure language.

8         Next, I'd like to turn to the *Hipp* combination. Petitioner has this  
9 argument that it raises now that basically in some arguments it had a brief,  
10 you know, comma separated clause to discuss -- it talked about how you  
11 could use *Retterath*'s waveguide material along with a shadow mask from  
12 *Hipp*. At no point in time did -- in the petition did Petitioner assert that this  
13 waveguide material from *Retterath* would serve as the light absorbing layer  
14 that they're now adding to that combination. So, basically, this is all kind of  
15 a hindsight argument to say, oh, yeah, that waveguide material that we  
16 identified way back when, we now say that's the light absorbing layer.

17         There are all sorts of problems with this. I mean, it wasn't presented  
18 in petition. I think this is the first we're hearing of it now. But also, in  
19 addition, there's no -- you know, there's not evidence that --

20         JUDGE CHERRY: You agree it says that in the petition.

21         MR. LAUPPE: Agreed, but, for instance, there's no evidence, for  
22 example, expert's opinion evidence, to suggest that that waveguide material  
23 from *Retterath* could serve as that light absorbing layer from *Hipp*. For  
24 example, I mean, we are asserting that that light absorbing layer -- or, sorry,  
25 that that waveguide material from *Retterath* is not actually opaque. It means  
26 letting light through. So in that respect, could that serve as the light

1 absorbing layer for the purposes of what *Hipp* discloses? There's no  
2 evidence to support that.

3       Next, I'd like to turn to the "coincident with" issue. So on slide 47,  
4 Petitioner argues that this actually supports their view because the focal  
5 plane of this lens could actually be larger. We disagree just given the fact  
6 that, like, within this optical system, as you can see, it's bounded by those  
7 kind of gray lines on the top and bottom, within this optical system the  
8 extent to which the focal plane extends here, to that extent, it's covered by  
9 that aperture layer. So in our view, I think that, again, supports our  
10 construction that "coincident with," in fact, refers to a correspondence in  
11 area. And even within Petitioner's argument as to this figure, they are  
12 conceding basically that, yes, in this case this required -- this involves  
13 coincidence between, you know, different areas or different sort of ranges.

14       Petitioner also asserted that, you know, we at no point in time and  
15 will not describe why the language, you know, "slightly larger than,"  
16 "slightly smaller than" in the prior art should be treated differently than  
17 some language in the '381 patent specification. But as Your Honor, Judge  
18 Cherry, I believe pointed out, we did provide exactly that account, for  
19 example, in our papers and what I've discussed today, which is that there are  
20 all sorts of reasons why you would consider the language in that prior art to  
21 potentially reflect a different understanding because it's a much different  
22 system with a different set of purposes. So, you know, just trying to take  
23 some language out of the prior art and comparing it one-to-one in language -  
24 - the '301 specification, in our view, that's improper.

25       And then finally, I'd just like to turn to Petitioner's slide 16. They  
26 raise this new reference that they brought up for the first time on reply.

1 They think this supports their view that, you know, "substantially  
2 coincident" only refers to, for example, partial overlap. You know, the  
3 language here is unclear. And again, we're just basically comparing  
4 language between different references. There's all sorts of reference like we  
5 pointed to in the intrinsic evidence of the '381 patent that, in our view,  
6 supports that the substantially -- or the coincident language within '381  
7 patents indicates, you know, substantial matching between emission and  
8 reception regimes.

9 And again, you know, we're faced with the same issue. If we're  
10 going to parse this language, this is not actually the language that appears in  
11 the claims here. The claim language is not substantially coincident. And so  
12 that's the final issue that I wanted to address.

13 Thank you so much for your time, Your Honors.

14 JUDGE CHERRY: Thank you. I'd like to thank the parties for their  
15 thorough and thoughtful presentations. And with that, the case is submitted.  
16 The parties should stay on the line for a few minutes to talk with the court  
17 reporter to get any spellings. But everyone should have a great day. Thanks  
18 so much.

19 REPORTER: Judge, before you go, could I just ask you, you  
20 mentioned a case, please, "Director's opinion." What was that again?

21 JUDGE CHERRY: Yes, *Mahle Bahr*, M-A-H-L-E B-A-H-R, with a  
22 space between Mahle and Bahr.

23 REPORTER: Thank you very much. And the counsel, if you could  
24 just stay on the line while the Judges leave, please.

25 (Whereupon, the proceedings at 12:46 p.m. were concluded.)

IPR2023-01456 (Patent 11,178,381 B2)

IPR2023-01457 (Patent 11,190,750 B2)

PETITIONER:

Michael Hawkins

hawkins@fr.com

Craig Deutsch

deutsch@fr.com

Yao Wang

ywang@fr.com

PATENT OWNER:

Nicoletta Kennedy

nkennedy@kilpatricktownsend.com

Megan Bussey

mbussey@kilpatricktownsend.com

Phillip Morton

pmorton@cooley.com

Eamonn Gardner

egardner@cooley.com

Patrick Lauppe

plauppe@cooley.com